NORTHROP-NORAIR NEWS

VOLUME XIX

PUBLIC SERVICE AWARD

Northrop-Norair News

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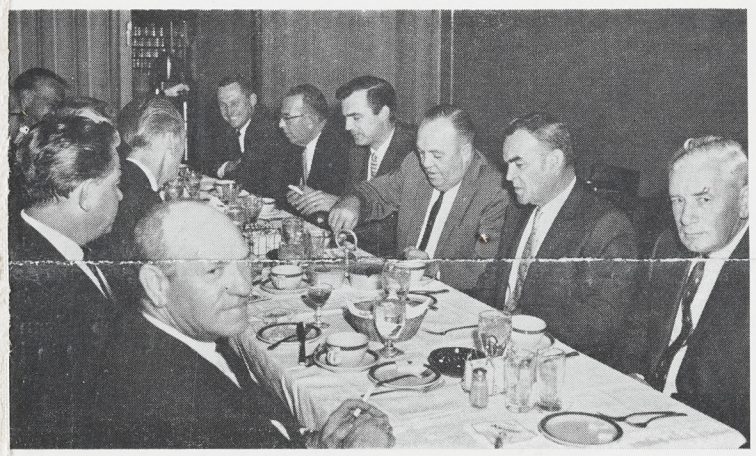
HAWTHORNE, EDWARDS AFB, PALMDALE, RAPID CITY — CAPE CANAVERAL, PRESQUE ISLE, EL PASO

Meeting at Rapid City

AT AIR FORCE TITAN SITE—Corporate Vice-president and Norair General Manager Dick Nolan visits project at Rapid City to check progress and brief personnel on Division site activity plans. First dinner meeting for management, supervision, key people was held at Westwood Restaurant. Max Fayrweather, site manager is at right.



WESTWOOD RESTAURANT—Another section of the dining room shows Norcrafters clockwise around table from front, Bill Monger, Finance controller; Ken McBride, chief, Quality Control; Clay Fullenwider, general supervisor, Program Planning branch; Don Baker, supervisor, Reproduction Services; Ralph Branning, Field Engineering branch; Dave Deering, chief Weapons System Operations group; Mike Bartmus, departmental assistant, John Profant, supervisor, Program Plans and Schedules unit; Link Hoen, supervisor, Traffic and Transportation branch; Gerald Smith, foreman, Electrical; Harold Miller, general supervisor, Maintenance Operations and Services branch.

APPETIZERS AND CONVERSATION — Rapid City Norcrafters take time out from busy site schedule to greet Mr. Nolan, compare progress notes and enjoy dinner. From left, Don Baker and Ralph Branning.

HANDSHAKE—Mr. Nolan exchanges greetings with Titan site Norcrafter Don Baker, Reproduction supervisor. Introductions to new Norcrafters were handled by Mr. Fayrweather, right. R. G. Cook, staff assistant to Mr. Fayrweather, is at left. Mr. Nolan briefed gathering on Northrop-Norair site activity plans, present and future.

Nolan in Talk to Los Angeles Chamber on PACE Program

American business could profitably spend as much money and effort on increasing management know-how as it does on technical research and development, Corporate Vice-president and Norair General Manager Dick Nolan told Los Angeles Chamber of Commerce members in an address before that body last week.

Mr. Nolan made this observation before some 200 Southland executives assembled to learn about Northrop-Norair's PACE program of industrial measurement.

The PACE presentation was sponsored by the Chamber's aviation and space committee.

"While most industries, and particularly the defense industry, spend great sums and employ outstanding people to maintain their technical competence by research and development, few have given any serious consideration to the field of 'human' research," Mr. Nolan said.

PACE, he said, is one of the most successful tools to emerge from Northrop's broad program of management research.

The success of PACE has put the program in demand throughout the defense industries and military establishments, Mr. Nolan pointed out. Northrop has installed PACE, on a fee basis, in plants of some of the nation's major industrial firms, he said.

PACE is essentially a statistical method of measuring the assignment effectiveness in factory, office or engineering areas, Mr. Nolan explained.

PACE rating is compared weekly with the budget, schedules and other indices of industrial performance.

If PACE rating drops, or fails to follow a normal upward trend, these comparisons help supervision to spot problem areas.

"The focal point is supervision," Mr. Nolan said. "PACE alerts. Supervision uses detailed knowledge to solve the problems."

Northrop's guiding principle throughout the creation and administration of the PACE program, he said, has been that "people want to do a good job. If work is not efficient, there is good reason. Often that reason is some management-induced shortage or procedural roadblock that PACE can pinpoint for quick remedial action."

Defense Realism Key to World Struggle—Jones

Northrop President Thomas V. Jones addressed many of the nation's space and research leaders in delivering the principal address at a meeting of the Tennessee Valley chapter of the Association of the United States Army at Huntsville, Alabama.

Pointing to the crucial period facing the nation in its struggle with world communism, Mr. Jones said, "The space penetration program of the United States cannot be a carbon copy of Russia's with a few editorial changes.

"A major part of the struggle with communism is in the defense and space area," Mr. Jones said, "and here economy of resources is especially important. This economy must be based on the integrated effort of management and technology, and the mutual understanding of the viewpoints and problems of each.

"If you have a progressive, realistic technology — this means you have a progressive, realistic management, for management is what you do with your technological competence; it is the catalyst that changes a potential into a capability.

(Continued on Page 2)

NORTHROP-NORAIR

NEWS BRIEFS

RAPID CITY — T-2 site Norcrafters from Hawthorne, Florida, and other points are locating in Rapid City without many of away-from-home problems so often encountered. Housing at the community has proved adequate to date. Some Norcrafters are buying, others leasing. Northrop-Norair move is closely coordinated with Rapid City civic leaders and city officials. Personnel requirements are being closely tuned to Florida manpower load. A number of Cape Norcrafters have already transferred and more are coming.

COLD COUNTRY—T-38 aircraft AF #59-1596 is now at Eglin Climatic Laboratory test hangar, is reported by Frank Mathes, chief, Field Support. The "all-weather" test ship arrived at Eglin after cross-country flight from Edwards with total elapsed time of 4:10. There were two stops enroute. Pilot was Captain Russell L. Rogers. Escort in F-104 was flown by Captain Bud Evans. In-

(Continued on Page 2)

HOLIDAYS

Tomorrow, November 24, is Thanksgiving paid holiday. All Northrop-Norair facilities will be closed for the day. Norcrafters will return to work Friday, November 25.

The yearend holiday time off will start at the close of shifts Friday evening and end with the beginning of shifts January 3, 10 days later.

Norcrafters Get Patent Payments

Nine Norcrafters are due to receive payments under the provisions of the Patent Award Plan, it has been announced by H. L. Fox, Division Patent representative, Administrative Services.

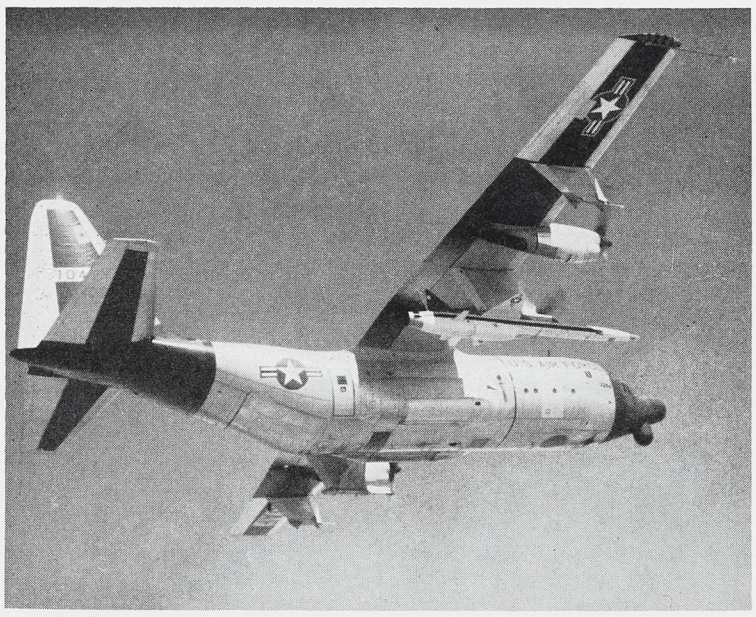
Total amount of the awards is over $500, Mr. Fox said.

Norcrafters who will benefit are Orby E. Blair, John H. Hanson, Rodney W. Horning, Mitchell F. Krause, Gordon A. Nelson, Wm. M. Porter, Fred H. Schnebley, Wm. B. Sponsler, and Allan J. Taylor.

Over 500 patents have been issued to Norcrafters in recent years.

Those seeking patent information should contact the patent representative, Administrative Services, extension 1478.

From Other Divisions



RADIOPLANE—Northrop Corporation-Radioplane's Q-4B supersonic target drone recently made its first free flight a successful one as it maneuvered over the desert near Holloman Air Force Base, N.M. The 35-ft. long drone, powered by a single General Electric J85-5 jet engine, streaked ahead of its GC-130A mother plane at controlled speeds up to Mach 1. The supersonic speed was reached without utilizing the afterburner with which the J-85 is equipped. Currently produced by Radioplane and undergoing development for the Air Force, the Q-4B is designed to function as an aerial target for air-to-air and ground-to-air defensive systems.

PAGE — Page has recently completed an expansion program in the Research and Development Directorate which has nearly quadrupled the size of the firm's original R & D Laboratory.

Page, whose Washington facilities include an R & D Laboratory capable of prototyping equipment as large as 100-KW radio transmitters, and a 100-acre field laboratory at Taylor's Island, Maryland, is making room for additional equipment and providing space for undertaking classified communications studies.

At Page's 100-acre laboratory located on the Chesapeake Bay, a new 28 foot troposcatter dish antenna is being added which will be used for a Tropospheric Scatter Test Range. The field laboratory also contains a prototype Mark II "piggyback" dual-frequency corner-reflector antenna designed and developed by Page.

The R & D Directorate is continuing studies and experimental measurements on low-noise tunnel diode amplifiers. Additional studies continue in the area of optimum system design, modulation diversity techniques, and redundancy coding for reliable high speed data communications.

Space age investigations include relay systems, using both active and passive satellite repeaters, ship based tropospheric radio relay systems, navigational techniques, and range programs. Additional research continues with long range HF single-sideband links and high-diversity microwave systems; long distance communications using advanced scatter techniques, meteoric scatter, upper atmospheric physics, differentially synchronous systems, and optimum detection.

Junior Achievement

BUSINESS VENTURES LAUNCHED—Northrop-Norair Division General Manager Dick Nolan helps launch Division counseled Junior Achievement firms with purchase of stock and best wishes for success. JA firm presidents are left and right, Dick Koontz of Klip-Co, Torrance Hi; and Judy Riley, Cal-Nov-Co, Westchester Hi. Standing are Norcrafters Junior Achievement advisors Joe Druliner, Commercial Products, and Tom Brazil, Manufacturing. Dick and Judy are busily preparing their new companies for Christmas trade production.

Buy BONDS

New Science Center Holds Open House

New Science Center laboratories for man's assault on the unknown were opened officially last week by Norair Division with an open house program which included briefings and demonstrations for some 30 civilian and military space officials.

Among the organizations represented were the National Aeronautics and Space Administration, Aerospace Corporation, the Air Force Ballistic Missile Division and Ballistic Missile Center, U.S. Navy Office of Naval Research, U.S. Army Ordnance and U.S. Army Signal Corps, Batelle Memorial Institute and the Jet Propulsion Laboratory of the California Institute of Technology.

Northrop officials who greeted the guests and outlined the scope of the Company's research programs were Thomas V. Jones, president; Dick Nolan, vice-president and general manager, Norair Division, and Dr. Ludwig Roth, Norair director, Research.

Among the special equipment and facilities demonstrated were:

An 87-foot steel "zero-gravity" tower, used for investigating the action of liquids and gases in controlled free fall for clues to their behavior in the weightlessness of space flight.

A magetogasdynamics research engine capable of accelerating ionized particles to tremendous velocities in order to provide thrust—a first step toward applying this new science to space propulsion systems.

Cryogenic equipment capable of converting helium gas into liquid helium at temperatures as low as 460 degrees (Fahrenheit) below zero for use in space propulsion studies.

Equipment for study of the lowly algae that some day may be the basis for man's subsistence during interplanetary space travel.

Jones—

(Continued from Page 1)

"History is the sound of footsteps — one nation walking upstairs in workshoes and other nations walking downstairs in carpet slippers. As a nation, we have come to a point in time when the comfortable carpet slippers may look inviting—the workshoes too binding. It is our duty, our obligation, our debt to history to lace the shoes tighter than ever, and start climbing up for the answers.

"If we don't we'll be following Russia's star."

Tony Demetriou, manager of Northrop's Huntsville office, also was a prominent participant in the meeting. He is president of the Tennessee Valley chapter, AUSA.

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CHARLES BRADFORD, Editor

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NORTHROP–NORAIR

NEWS BRIEFS

(Continued from Page 1)

strumentation for the cold weather hangar ordeal is complete and checkout is under way. Tests were scheduled to begin 7 November.

PANELS FOR THE B-70 — Letter contract has been received from North American Aviation for substantial numbers of brazed panel for the B-70 airplane, it has been announced by Bob Lloyd, vice-president, Manufacturing. Work called for includes, tooling, fabrication of detail parts, brazing, assembly. Deliveries of structural honeycomb panels will continue through the next seven months. "Contract is highly significant," stated Mr. Lloyd, in that —"Northrop-Norair now becomes a member of the Air Force team charged with producing the most advanced airplane the world has seen . . . Our project leaders charged with coordination of the B-70 panel contract are men distinguished by long experience and top qualifications. They are: L. A. Morgan, program manager; J. L. Hill, Project Tool engineer; Harry Anderson, Materiel representative; and L. B. Massey, general supervisor, Manufacturing Operations." Contract negotiations were conducted by Jim Carpenter, Marketing representative; Bob Reed, chief, Subcontract group; and Dick Beck, director, Manufacturing Engineering.

New Methods Help Solve Transportation Problems

How people and material resources move from place to place, now, and in the future, is a topic of highest national concern.

J. L. Taylor, chief, Norair Systems Analysis group, and a participant in the recent Transportation Research Summer Study Group under the sponsorship of the National Academy of Sciences, reports efforts of the country's leaders in finding a solution.

"Academy findings," stated Mr. Taylor, "point to urgent need for development and application of large scale systems simulation models in order to provide fact and recommendations.

"A general approach is considered to be a national transportation system concept which will sustain the entire process of our society. To achieve this objective, an integrated national transportation analysis model must be developed to provide results required by:

(1)—The Congress as a basis for adjusting transportation legislation, particularly where there appears to be an imbalance due to regulation.

(2) — Executive Departments as a basis for recommending programs for the balanced promotion and development of the transportation industry.

(3)—The Office of Civil Defense and Mobilization as a basis for developing, in cooperation with other agencies, programs for the allocation and priority use of transport in emergencies.

(4)—Military Departments as a basis for determining the extent to which commercial services may be relied upon to support military operations.

(5)—Industry as a basis for long range planning, for assessing the impact of new technologies upon transport applications and as a basis for promoting specific products and services that can be made available by industry.

While participating in the Summer Study Group, Mr. Taylor developed a preliminary paper for the Academy on National Transportation Analysis, which will be utilized as a guide to future activity in this field.

DR. BENEDIKT TO CHAIR SPACE COMMITTEE

Dr. Elliot T. Benedikt, Norair scientist, has been elected chairman of the Space Physics Committee of the American Astronautical Society.

Dr. Benedikt is head of the Space Physics Laboratory, Astro Systems and Research Laboratories. His recent activities which attracted international scientific attention include:

—His investigation of the effects of weightlessness (zero-gravity) on the behavior of liquids.

—His theory of the "disintegration barrier" of particles which would restrict the speed of space vehicles to much less than the speed of light.

—His role, along with other Northrop scientists, in developing the concept of Heliodyne, a solar-powered space vehicle that would contain only two moving parts yet would be capable of exploring the solar system and transmitting photos to earth.

JOHN B. CLARK ANNOUNCES NEW IR APPOINTMENT

John B. Clark, Norair director of Industrial Relations, has recently announced the appointment of Gerald H. Shaw as Industrial Relations analyst to head a newly established Research and Analysis function within the Industrial Relations Section.

Mr. Shaw brings to Northrop many years of broad industrial

GERALD H. SHAW

relations experience, having previously been employed with a management consulting firm of national reputation and as personnel supervisor at Vicker's, Inc., a division of Sperry-Rand Corporation. He is a graduate of Syracuse University where he also earned his master's degree in industrial psychology.

A Burning Question

By Aireporter

Each week a new aerospace material, or so it seems. René 41. Haynes 25. "Moly." Silicon. Boron. Tungsten. Inconel. Plastics. Ceramics.

Weld. Braze. Drill. Machine. Form. Stretch. Melt them—if you can. Condition for space flight, reentry, triple, quadruple Mach.

Production costs. Electronic and numerical controls. Charts and more charts.

Such is the regular day-to-day work of Northrop-Norair Manufacturing Research and Development group, Barny Gaiennié, chief.

In a small office on the balcony, Plant One, amidst a clutter of honeycomb production test specimens, "Barny," as he is known throughout industry and customer circles, leans forward over sheets of graph paper and talks to Aireporter of what's new and startling in manufacturing processes and equipment.

He is a pleasant man who enjoys his work. Difficult and exotic materials are his favorite people.

READY OR ELSE

Chip, strip, bar, and billet. the exotics come to him with improbable and untamed manufacturing properties. When they leave the R&D "workshop" they are ready to aid man in his quest of speed and space or else.

"These new exotics are tough, mean to work with, super strong, resistant to heat," says Barny, "But there is always a way. Not too many months ago, titanium forming was a difficult problem. Today we use electrically heated dies, press platens and radiant heat machines. As a result, we form Ti as easily as magnesium or aluminum."

It is one thing for the designer to "design in" a new material that will retain its strength through meteor speeds with air friction heating, or through rigidity and strength solve a critical weight problem. It is another thing to successfully manufacture this material, since the manufacturing environment is often much tougher than the flight environment. If a part must hold its shape while red hot in flight, it must be formed at a higher temperature in the shop.

"The most critical test is often the factory process itself," said Barny.

NORTOBRAZE INFO

Barny Gaiennié and his Manufacturing R&D team were instrumental in securing the million dollar Nortobraze Air Force contract.

"Nortobraze panels are now going through the factory the same as any production run," stated Barny. "Every factor of time, cost, and proficiency of the Nortobraze process is being carefully charted."

Controls, electrical and numerical, are as much a part of Manufacturing R&D projects as research into the production characteristics of the materials.

"Perfecting production equipment and methods for materials in a Mach 3 bomber is only half the job," states Barny. "You've got to perfect electronic controls for the equipment at the same time . . ."

A rundown of projects now under way in Manufacturing R&D includes:

"Diffusion" brazing, a startling new weight-saving method of brazing space and multiMach honeycomb materials through action and counteraction of the brazing and brazed materials. Alloying and interlocking crystallization takes place during the braze cycle. The process, which eliminates a substantial portion of the fillet weight is targeted for designs in the high temperature class. It is being applied to Haynes 25 (cobalt base) and to Inconel 702 (nickel base) for environments approaching 2000° F.

Welding research is being carried on for 1600 degree heat ranges with René 41 (high nickel) and columbium (the element). Work is also being carried out with molybdenum, an element which, although lacking in comparative strength in the lower heats, excels all but tungsten in the higher ranges—up to 2400 degrees.

"Tungsten would cost as if building a ship out of diamonds," says Barny, "but it is good over 3000° F."

Ceramics—particularly the reinforcement of ceramics to lend tensile strength. Ceramics are usable at extreme heats and are capable of resisting great compressive forces. They lack in tensile properties. It is the hope that skeletal reinforcement will correct the deficiency.

TOUGH PLASTICS

Plastics are also being researched. Manufacturing R&D has produced sections that withstood heats up to 800 degrees without loss of strength or integrity.

Phenomenon of plastic carbonization are becoming of prime interest.

"Every customer requirement, if of an advanced nature, sets up a chain reaction of challenges between Engineering design on one side, and Manufacturing equipment and techniques on the other," stated Barny.

"A few years back it was all aluminum, magnesium, and stainless. You could saw it, bend it, drill it, weld it at any bench or in any test lab. But times have changed. Tests of the new exotics are becoming projects in their own right. Test labs of today need support by the latest controlled equipment; actual heavy duty production tools, conversely production environments must be controlled to meet metallurgical requirements stipulated in the lab.

Where will the research trail lead?

Will the quest go on for materials of higher and higher heat resistant properties? Or will research men give up the battle and concentrate on artificial environments via refrigeration?

"That," said Barny with a smile, "is literally a 'burning' question. And it's a coming decision of major effect on our industry's plant and equipment complements."

There is an expansion program under way for Manufacturing Research and Development workshop area.

This will be completed in 90 days. At that time, a tour will be arranged and Manufacturing R&D will invite many to come and see—customers, key Corporate and Divisional officials, and selected representatives of the aerospace industry.

NOISE LAB ON WHEELS — Northrop-Norair's electromagnetic interference laboratory and mobility plus. Designed primarily for surveillance work, this 40-foot trailer contains all necessary equipment to perform designed compatibility tests on any given system, has its own power supply to assure true readings, is air-conditioned for any climate from poles to equator. Feature of concept is calibrating a particular weapons system to a specific location or environment.

Noise No Problem for Model 101

Northrop-Norair's new Electromagnetic Interference Test Console, Model 101, has been selected for vital systems compatibility tests on the Navy's Polaris program, it has been announced by John Alison, vice-president, Marketing.

The equipment was shipped to the Lockheed Missile and Space Division, Sunnyvale Plant, last month. It is already at work.

Norair's highly refined products for the testing and monitoring of electronic systems for missiles, aircraft, and satellites, is born of the Division's 13 years experience.

From the confusion and jumble of test boxes, extension cords, and scattered items of electronic equipment that was a part of every compatibility test in former years, Norair's Model 101 now enables test personnel to do the job with swiftness, accuracy, precision, and with great savings in money and man-hours.

Division capability in monitoring and surveillance of electromagnetic noise and radiation interference is now being demonstrated full scale to all three military branches.

Norair equipment is designed and tailored to fit the particular system need.

Mobility is a feature. Model 101 itself is mounted on wheels and can be easily moved to any part of a site or complex. In case of over-the-road-requirements, or general noise surveillance requirements, the equipment is installed in large aluminum vans complete with air-conditioning and independent power supply.

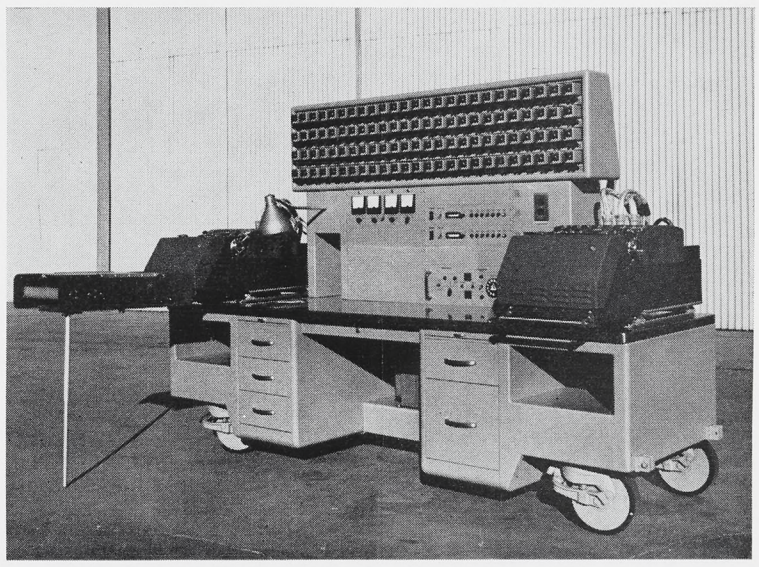
The efficiency of the Norair Model 101 concept when compared with the old nonintegrated method is illustrated by figures from typical missile system compatibility check.

Under the old system, test equipment set-up took 3 men—15 days. With Model 101, it takes 2 men—1 day.

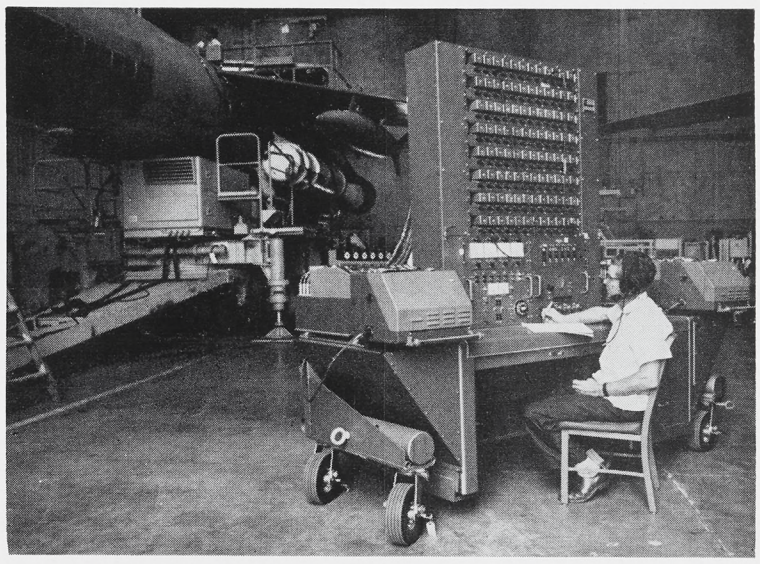
To test and record, the old system required 12 men—2 days. With Model 101, 2 men and 1 day does the job.

Norair's program equipment in the electromagnetic interference field is being handled by Doug Stephens, supervisor and Jerry Adams, design specialist in Radio and Radar System Design.

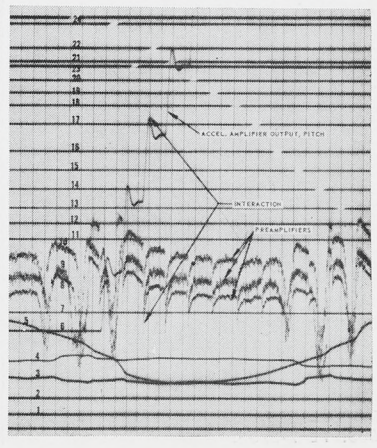
Marketing representatives are Jack Hebard and J. J. Lipchak.



NOISE TRACKDOWN—Norair's Model 101 production model console being used on Polaris program in electromagnetic interference compatibility tests. Model 101 console is 99 x 68 x 30 inches. Wheels make it entirely portable and ready for duty at any point on the site. This equipment was designed by Norair specifically for Polaris program. Concept, with surveillance applications, is being demonstrated to all services.



FORERUNNER—Early form of Model 101 runs compatibility test on Snark System. Such tests check harmony of various systems within the missile. "Noise" or electrical interference from one system may clash with and ruin another systems ability to do a particular job. This checkout was formerly done by many men with many separate pieces of equipment. Norair way is to condense, simplify, modernize. Console data is readily reduced so that Engineering can analyze and correct any system deficiency.



DATA—What the data processor sees. In this case a 24-channel oscillograph shows where channels five, six, four, and three set up an interaction, become incompatible. "Noise" from Channel six, an unharmonious electrical condition, exerts malfunctioning influence on its neighbors. A 25-cent resistor can set up a chain interaction that could destroy a million dollar bird.

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

ELECTRIC TRAIN, Lionel, cost $80, $40; chemistry set, cost $20, $10.; erector set, cost $10, $5. GR 8-4630. A

ELECTRIC WIRING EQUIPMENT, wire, sockets, timers, breaker boxes, fittings, $30. OR 0-2052. A

SURFACE PLATE, 15"x18", cast iron, 2 parallel bars, ½"x1½"x12", $65. FR 4-9027. A

HOUSEHOLD FURNISHINGS, couch, 8', brown, w/foam rubber seats, $50.; coffee table, end tables, 2, Neva-Mar, $30. DA 5-1324. A

BEDROOM SET, Mr. & Mrs. chest, headboard, mattress & springs, $50. OR 3-4406. A

AUTO, Plymouth Belvedere, 1958, h/t, sport coupe, 30,000 miles, $1295. FR 5-8536. A

MOVIE EQUIPMENT, movie camera, Keystone, 3-turret, projector, DeJur, 1000-w., wide-angle, screen, $125. OS 9-4342.

BEDROOM SET, 3-pc., walnut, $25. OS 5-1415. A

REFRIGERATOR, Hotpoint, pink, double-door, $75. DA 9-9407. A

DINETTE TABLE, solid maple, $35. OS 5-2892. A

AUTO, 1951 Chrysler Imperial, V-8, new w/w tires, power brakes, power windows, new dual exhaust system, $400. Box 101.

MOTORCYCLE, 1959, Triumph Sportster, large piston & carb., $250. DA 4-8663.

DINING ROOM SET, blond, oak, 5-pc., $25. OS 5-7153. A

6-TRANSISTOR RADIO, GE, portable, unbreakable plastic case, 4" speaker, $20.; 3, large, wooden, doll beds, w/adjustable sides & casters, $2.75 ea.; 2 bird cages, w/dishes, $2.50 ea.; birdcage w/wrought iron stand, $3.25; bedframe, hvy. gauge steel, w/casters & twin bed springs, $10. FR 4-8036. A

RIFLE, Enfield-Martini, .22, reblued & refinished, $25. DA 7-9687. A

TRAIN LAYOUT, 2 trains mounted on 4'x8' bd., 4 elect. switches, 2 transformers, w/extras, $50. DA 4-7529. A

CAMERA, Polaroid, model 80, w/flash unit, lite meter, diffuser, leather carrying case, $75. DA 6-1572. A

TRAIN SET, Lionel; $40.; Chev. 1950, fender skirts, $5. FR 2-1497. A

SKI BOAT, 14', w/2 Mark 55's, 40 h.p. Mercury outboards, fully equipped, $650.; boat trailer, big wheels, 3" channel construction, fit any 14' boat, lights incl., $150. OR 4-3426. A

OUTBOARD MOTOR, Mercury Mark 55A, 1958, w/controls, $300. FR 1-5091. A

MOTORCYCLE, 1957, Simplex, $95. OS 5-1818. A

TAPE RECORDER, Roberts, stereo-type, model 90S & 901—stereo record/playback, 2 unit, portable, $230.; camera, LEICA, 35mm, model IIIG w/f1.5 lens, case, $140. GA 4-0384. A

WASHER, Maytag, wringer-type, excellent condition, $30. DA 5-0078. A

CLOCK-RADIO, Philco, $8. FR 5-3936. A

BABY EQUIPMENT, demonstrator set, Wonda-Chair, hi-chair, table & chair, rocker, stroller, tilt-table, chalk, brush & blackboard, safety bar & teeter chair, chrome, turquoise, $150. OS 9-2433. A

CAMERA, Kodak, Duraflex II, w/Kodak lens, flash holder, leather case, $15. FR 1-2679. A

MOTORCYCLE, 125cc., 3-spd. transm., $100. FR 6-8443. A

6 METER MOBILE RECEIVER-TRANSMITTER, w/17W power supply included, $55. EM 4-3941. A

STOVE, wood-heating, $12. OS 6-2162.

PIANO, walnut, spinet, Cable, 88 note, $349. PL 4-9711. A

AUTOS, Chevrolet, 1952, 4-dr., deluxe, Power Glide, w/htr., $250.; Plymouth, 1950, 2-dr., radio, heater, overdrive, $195. PL 4-5909. A

AMPLIFIER, 2, 35W, $30.; speaker, 12", birch floor model, enc., $10., ST 4-4123.

AUTO, Chrysler, New Yorker, 1957, conv., full-power, radio, heater, w.w., $1350. DA 9-8454. A

STOVE, 4-burner, oven w/timer, $25. FR 2-8711. A

ELECTRIC TRAIN, freight "O" gauge, track & switches mounted on 4'x8' plywood panel w/accessories, $20.; scooter, $5.; bicycle, w/training wheels, hvy-duty, $5.; coffee table, lime oak, $10.; table lamps, 2, light green, $12. FA 1-2359. A

TABLES, 2, mahogany step-type, $10 ea.; coffee table, mahogany, 36"x18", w/glass top, $7. OS 6-2383. A

SPEEDWRITING COURSE, complete, used 3 wks., cost $44.; $34. OS 5-5672. A

FURNITURE, 2-pc., green, sectional, $35.; dining table, blonde, folding-type, 4 chairs, $25.; table lamps, 2, grey & green, $6.; sofa chair, large, $10.; 2 pictures, $6. FR 5-9690. A

DAYBED, $15. Box 102. A

WANTED TO BUY

FORD, 1957, 4-dr. Victoria or Fairlane 500. PL 7-2753. B

SANTA WAITING FOR JUNIORS

SUNDAY, DECEMBER 18, BIG DAY

A big all-out Northrop Juniors' Christmas party will be staged on Sunday, December 18, it has been announced by the special events committee of the combined Norair and Nortronics NRC.

"There will be sleigh loads of toys and tummy loads of candy and ice cream," states the committee. "Every Northrop Junior is welcome. Santa's lap is waiting."

Hours of the merry affair will be from 12 noon to 4 p.m. Location is the NRC Clubhouse, 175 North Hawthorne Boulevard in Hawthorne.

As in the past, there will be toys and excitement in large quantities. There will be fine Christmas decorations throughout the Clubhouse.

This is something that the young folks cannot miss.

It will be the time for Christmas parties. Rapid City Norcrafters are already making holiday plans. Palmdale, Edwards, Florida likewise. More details later as festivity blueprints are released.

Again — the date, December 18. Time, 12 noon to 4 p.m. Place, the NRC Clubhouse, 175 North Hawthorne Boulevard.

Who is invited? All Northrop Juniors.

NRC Gadabouts Entrain For Las Vegas, Dec. 26

Anyone for Las Vegas . . . ?

The NRC Travel Club, Howard Cornelius, commissioner, will entrain via Union Pacific streamliner come December 26 to spend happy holiday time at the fabulous city.

Official title for the trip is "Las Vegas Daze."

The Travel Club's gadabouters for a total of $37.92 spend December 26 to 29 at the Hacienda on the strip, partake of two champagne parties, free golf, chartered busses between train and hotel, breakfast, and lunch on the train going. Dinner returning. Show reservations at the New Frontier. A buffet dinner at the Hacienda.

Howard has reserved 100 rooms at the Hacienda. It is first come, first served. November 30 is the deadline. Check with Personnel Activities.

The trip gets underway at the Union Station, 9 a.m., December 26, ends back at the Union Station at 11:30 p.m., December 29.

NOT TOO LATE FOR NRC RAG DOLL CONTEST

From rags to riches . . . !

A reminder that it is not too late to enter the rag doll contest now underway for Norcrafter ladies. Prizes will be tickets to Disneyland and Savings bonds.

Dolls will be sent to homes for retarded children.

Deadline for completed dolls at Personnel Activities is December 9.

GET TICKETS FOR PALLADIUM PARTY AT DOOR

Get your Palladium party tickets at the box office. Party is just two days away, November 26.

ID card is required to get the special one dollar rate for the evening.

Reservations are still being taken at Personnel Activities for dinner. Call 2784. Dinner prices start at $2.50.

Art Kassel will make his famous "Kassels in the Air" music.

NRC officials will host.

The Palladium is located on Sunset and Vine.

CODE CLASS NOW UNDERWAY FOR NRC RADIO CLUB

All Norcrafters are invited to attend the free code class now being presented by the NRC Radio Club, states Paul Serafin, commissioner.

Sessions are weekly on either Tuesday or Wednesday, 7:30 to 10 p.m., at the Clubhouse.

The NRC station is W6VPZ.

There will be an educational meeting tonight, November 23, also at the Clubhouse. Time is 7:30 p.m.

Christmas Tee Tourney Set For Fox Hills

The NRC annual Christmas golf tournament will be held at the Fox Hills East Course and Baldwin Hills West Course on Tuesday and Wednesday, December 27, 28, it has been announced by Bill Putnam, commissioner.

Entries open December 5 and close December 22.

Entry forms are now available at Personnel Activities, Plant One, Two, and Industrial Relations Plant Three, and Mariposa.

Added attractions are a putting contest and a longest drive contest.

Trophies and prizes will be awarded.

NRC SEA SCOUTS TO HOST AT BRIDGE OF HONOR

The NRC Sea Scouts' ship Seagull will be Bridge of Honor host for the upcoming Centinela and South Bay district Sea Scout groups, it is announced by Sid Cohan, commissioner.

The Bridge, Christmas party, and dance will be December 20, 7 to 10:30 p.m. at the NRC Clubhouse.

Honors will be awarded to all boys who have advanced in rank.

THE ALASKAN
A Steak and Egg Breakfast
Each Tuesday, 5:30 a.m. to 8 a.m.
Price—One Dollar
All Cafeterias

BLOODMOBILE VISIT SETS DONOR RECORDS

Personnel Activities folk, Charles Boyle, supervisor, advises that the recent bloodmobile campaign was highly successful. One hundred and ninety-eight pints were given.

Blood bank was filled to capacity for the day.

Appointments were kept promptly, rejection of donors by blood bank doctors was at a minimum.

"Next time, a bigger bloodmobile," says Charles.

Meanwhile, the Norcrafter blood bank account is in balance again.

BOWLING LISTS STILL OPEN

Entries for the Christmas Bowling tourney are still open. Beat the deadline. It's next Monday, November 28.

The event will be held at the Del Mar Lanes, December 29, 30, and 31.

WANTED TO BUY

DINING ROOM SET, maple. Box 103. B

DRAFTING MACHINE & SCALES. Box 104. B

FREE (to be given away)

PUPS, part terrier, 3-wks.-old, OS 6-1288. D

RENTALS OFFERED

APT., 1-bdrm., duplex, children, pets ok, water, rubbish paid, yardwork done, paved parking area, yard, $60. mo. FR 2-7654. E

HOUSE, furn., near beach, will share w/someone, $50. mo. FR 1-2532. E

APT., 2 bdrm., w/w carpets, built-ins, drapes, half mile from Northrop. $95. OS 6-8816. E

APT., duplex, 1 bdrm., unfur., car port, water paid, $75 mo. OS 9-4194. E

APTS., 1 & 2 bdrm., unfur., redecorated, w/garage, 2 mile from Northrop, $75 & $90. mo. OR 8-9406. E

RIDES WANTED

7 a.m. — 3:45 p.m.

HOLMES & FLORENCE, Los Angeles. Betty Bacon, ext. 2755, LU 5-7292. 2

CRENSHAW & 71st ST., Los Angeles. Elmer W. Alloway, jr., ext. 2755. 2

CENTURY & VERMONT, Los Angeles. Opal Johnson, ext. 2568, PL 7-3900. 2

7:30 a.m. — 4:15 p.m.

MONTANA AVE. & 14th ST., Santa Monica, Fred Diggles, ext. 2520, EX 3-8807. 13

WILLOW & PACIFIC, Long Beach. S. V. Conway, ext. 405, GA 4-0384. 3

8 a.m. — 4:45 p.m.

HAWTHORNE & CARSON, Torrance. Betty Wolf, ext. 2123, FA 8-5958. 5

DEL AMO BLVD. & PALOS VERDE ST., Lakewood. Jim Greenough, ext. 1401, TO 6-5703. 5

SAN DIEGO FREEWAY & SANTA MONICA, Los Angeles. Harold E. Seielstad, ext. 1654, GR 8-4630. 5

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NRC Good Time Table for December

For enrollment or information on activities listed below, call or contact Personnel Activities, Plant One, extension 2784. All clubs meet at the NRC Clubhouse unless otherwise noted.

ART CLUB,
Meet in Annex Thursdays, 7 p.m. Models furnished by NRC.

BALLROOM DANCE CLASS
Thursdays, 8:15-10 p.m.

BASKETBALL, Bill Greene
League play Tuesdays p.m. Practices, Saturdays a.m. at Leuzinger Gym.

BIBLE STUDY, C. J. McGuire
Plant I—Daily, 11:30-12:15, Tool Design Bldg., 11-11:45, 5566 Conf. Room. Plant II—Mondays & Thursdays, 12-12:45, Conf. Room 2. Eng. Center—Daily 12-12:45, Reliability Conf. Room.

BOWLING (days)
Christmas tournament, December 29, 30, 31, Del Mar Lanes. Entries now open.

BOWLING (nights)
Christmas tournament, December 29, 30, 31, Del Mar Lanes. Entries now open.

BOY SCOUTS, Sid Cohan
Sea Scouts meet Tuesdays, 7:30 p.m. Cub Scouts meet 4th Friday, 7:30 p.m. Cub Party December 16th. All Norcrafter boys welcome.

CAMERA CLUB (days)
Meet 1st & 3rd Wednesdays, 7:30 p.m.

CAMERA CLUB (nights), Gene Beck
Meet 1st & 3rd Saturdays, 8 p.m.

CAMPING CLUB, Fred Armstrong
Meet 1st Wednesday, 7:30 p.m. Potluck Dinner, December 7, 7:30 p.m.

GEM & MINERAL CLUB (days),
Meets 2nd Wednesday, 8 p.m. Party, December 17, at 8 p.m.

GEM & MINERAL CLUB (nights), Doyle Shook
Meeting place varies. Meet 1st Wednesday, 1 p.m.

GOLF, Bill Putnam
Fox, Baldwin Hills, Xmas tourn., December 27, 28. Cost $7.00, 7:30 a.m.

GUN CLUB, Earl Horton

MIXED CHORUS, Ron Henderson
Meet Tuesdays, 7:30 p.m.

MODEL RAILROAD, Jack Wilson
Meet in Annex, Thursdays, 7-10 p.m. Visitors welcome. Operation night, 1st Thursday of month.

ORGAN CLUB, Gail Skinner
Concert, 8 p.m., December 5, at Inglewood Elks, 317 S. La Brea.

RADIO CLUB, Paul Serafin
Meet last Thursday, 7:30 p.m. Radio code class meets Tuesdays and Wednesdays, 7:30 p.m. NRC's station is W6VPZ.

RIDING CLUB, Tex Stately

SKEET CLUB, Bob Bagby
Shoots alternate Saturdays, Jan. 14, 28, at Rancho Angelus Range, Main & Broadway, 10 a.m.

SKI CLUB, Bernie Shyffer
Meets 2nd Wednesday, 7:30 p.m.. Xmas Mammoth Mt. Trip, December 27-January 1.

SKINDIVING, Ralph Gonzales
Meet 3rd Tuesday, 7:30 p.m.

SPORTS CAR CLUB, Bill Perry
Meet 2nd Thursday, 7:30 p.m.

SQUARE DANCING, Dale Adkinson
Henry Clay Jr. Hi, 124th & Western, Fridays, 8-11 p.m.

SURF FISHING, John Pawlicki
Meet 1st Tuesday, 7:30 p.m. Field Trip, December 17, 2-6 p.m., Hermosa Beach.

TENNIS, John Potts
Free instruction & practice Saturday, 10 a.m., at El Camino Jr. College.

TOASTMASTERS 212 (days), Jack Apodaca
Meet at Cockatoo Inn Thursdays, 6:30 p.m.

TOASTMASTERS 1398 (nights), Jay Rayner
Meet at Western Ave. Country Club Thursdays, 12:15 p.m.

TRAVEL CLUB, Howard Cornelius
Las Vegas Daze, December 26, 27, 28, 29. Transp. & lodging, $37.92 a person.

FOR THE LADIES

BOWLING (nights), Gloria Bagley
Christmas Tournament, December 29, 30, 31, Del Mar Lanes. Entries now open.

BOWLING (days), Corinne Davis
Christmas Tournament, December 29, 30, 31, Del Mar Lanes. Entries now open.

GIRL SCOUTS
Mariners, Tuesday, 7 p.m., Navel Reserve Center, 201 W. 126th St., Hawthorne, ages 13-18. All Norcrafter girls welcome.

KNITTING, Ethel Simpson
Meets Thursday, 7:30 p.m. Free instructions each meeting.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, December 7, 1960

HAWTHORNE, EDWARDS AFB, PALMDALE, RAPID CITY, PRESQUE ISLE, EL PASO

NORTHROP-NORAIR

NEWS BRIEFS

COMPUTER COURSES—Six computer courses are currently under way at Norair. (1) Systems, Finance, and Management personnel, a 7090 familiarization course; (2) familiarization lectures for engineers; (3) for Finance personnel, a programming course on the 7090; (4) for Publications tech writers, a familiarization course covering the computer field; (5) and (6) for engineers, courses in programming on Analog and digital systems. Courses are arranged by the Industrial Training group.

EUROPEAN TRENDS—Welko Gasich, director, Engineering Advanced Systems section, has recently returned from European trip where he observed and evaluated technological capabilities of companies in VTOL projects. Trip was follow-up to his June Paris visit where he attended VTOL conference of all NATO nations . . . "European and English aircraft manufacturers are making significant contributions to the VTOL art," stated Mr. Gasich. "They lead the known world in VTOL research and development and they are close to flying hardware. The geography of Europe—short distances between capitals, many short landing fields—are contributing factors in this marked advance." While in Europe, Mr. Gasich also reviewed tactical weapon requirements with SHAPE, Mutual Weapons Development Team, and with USAFE.

RAPID CITY—The site activation program is progressing on schedule, states Jim Matthews, manager, Site Activation Department. More personnel transfers from Hawthorne and Florida are scheduled through December and January. Applications for transfer are still being accepted through normal channels. Information can be obtained from Personnel office.

NAVY AND THE T-38—U.S. Navy and Marine pilots, in conjunction with the T-38 trainer flight and evaluation program have now flown the N-156F, it is announced by John Alison, Northrop-Norair vice-president, Marketing. Flights were from Division Palmdale facility. Navy and Marine pilots who flew the fighter were, Commander L. R. Mix; Lt. Commander J. Sickle, U.S. Navy Liaison office, AFFTC, Edwards; Commander E. R. Hanks, squadron commander VF121, U.S. Naval Air Station, Miramar, California (VF121 training squadron will first introduce F4H Mach 2 fighter into Navy operations); Commander L. E. Kirk, jr., aide and special assistant for Aviation to Secretary of the Navy, Washington, D.C.; Commander T. S. Sedaker, commanding officer, Air Group 19, Moffett Field, California; Commander W. A. Jernigan, and Major W. E. Sparling (USMC) from the Staff of Rear Admiral L. J. Kirn, chief, Naval Advanced Air Training, U.S. Naval Air Station, Corpus Christi, Texas . . . Norair Marketing Department personnel wish to extend appreciation to Palmdale personnel for conscientious and thorough attention to detail during the flights.

QUARTERLY REVIEW—Management Council will hold quarterly review 9 and 10 December, it is announced by Chairman, Corporate Vice-president and Norair General Manager Dick Nolan. Full-scale review of total Division plan will take place. Progress will be assessed and evaluated. Next quarter funding and direction of Division effort will be determined.

EUROPEAN PRESENTATIONS—Team from Engineering's Systems Analysis group, J. L. Taylor, chief, has been engaged in a joint Northrop-Norair Division and Northrop-International survey of capabilities, operations research, and systems analysis requirements of free European nations. Series of presentations and demonstrations provided positive results. Reception was excellent, interest was high . . . Norair team was composed of J. J. Gehrig, supervisor, Strategic Systems branch; and Harold Tombach, supervisor, Defense Systems Branch.

(Continued on Page 3)

Radioplane's RP-76 in Supersonic Nike Scuffle

A Nike Hercules Missile fired by U.S. Army Air Defense Command troops at McGregor Range, Fort Bliss, Texas, recently scored a direct hit on an RP-76 target missile at an altitude of 55,000 feet. The supersonic target was intercepted while flying at a speed of Mach 1.15. This is the highest and the fastest target which has ever been scored on by ARADCOM troops during annual service practice.

Manufactured by Northrop Corporation's Radioplane Division, Van Nuys, California, the RP-76 recently established a new target missile altitude record by blasting to 74,782 feet at a maximum speed of Mach 1.03 while climbing, during a U.S. Army evaluation program conducted at White Sands Missile Range in New Mexico.

Nolan has High Praise for Norcrafters in M-C Talk

Northrop Management Club members heard Corporate Vice-president and Norair General Manager Dick Nolan pay high praise to Division personnel in his "state of affairs" address Friday evening.

The T-38 trainer contract is now one of the largest government airplane orders in the United States, and prospects look good for additional sales—both at home and abroad.

"Norcrafters have done a terrific job," stated Mr. Nolan.

"Manned aircraft are coming back into focus," he said and explained that reactivation of the B-70 contract indicated such a change in Department of Defense perspective.

Continuing, Mr. Nolan gave the capacity audience details and status on Laminar Flow Control, Norair's part in the guidance work on GAM 87, subcontract

(Continued on Page 2)

Changeover to IBM 7090 Computer System Announced

A major change for complete standardization of all Northrop-Norair computing and data processing equipment and operations has been announced by Norair Division General Manager Dick Nolan.

The move is an outcome of the recent Corporate-wide all Divisions study program of Company data processing equipment and facilities conducted under the jurisdiction of Corporate Senior Vice-president Robert R. Miller.

Already the Division has begun programming for computer changeover to the IBM 7090 system.

Also, all computing facilities and personnel, formerly under the jurisdiction of various Engineering and Finance Departments, have been brought together on section status and moved organizationally to the Office of the Assistant to the General Manager Jack Mannion.

Lee A. Ohlinger, former chief, Engineering Computing and Datamation Center, has been named director of the new section and will be directly responsible to Mr. Mannion.

The IBM 7090, one of the most modern and versatile computing and data processing systems available in the world today, will be installed in the Computing Center in December. The new system will become fully operative in Division affairs early in January 1961.

(Continued on Page 2)

LEE OHLINGER HEADS NEW DATA SECTION

Lee A. Ohlinger, newly appointed director, Northrop-Norair Computing and Datamation Center, is a recognized leader in two of the newest scientific fields—atomic energy and electronic automation.

He graduated cum laude from Armour Tech in Chicago in 1927, and for 15 years engaged

LEE A. OHLINGER

in structural, mechanical, and chemical engineering.

From 1942 to 1946, he was with the Manhattan project where he made engineering designs for the first reactors at

(Continued on Page 3)

Northrop Corp. First Quarter Earnings up

Northrop Corporation had increased sales and earnings in the first quarter of its fiscal year, the Company has announced.

Net income for the three months ended October 30, 1960 was $2,042,000, equivalent to $1.09 per share on 1,874,607 shares outstanding at that date. In the first quarter of last year, the Company had net income of $1,463,000, equivalent to 80 cents per share on the 1,826,010 shares then outstanding.

Net sales for this year's first quarter amounted to $62,028,000 compared with sales of $55,873,-

(Continued on Page 2)

"Decel" Basin For Landings By Nortronics

A simple and economical airport runway installation to assure greater takeoff and landing safety for large commercial jet transports has been proposed by the Nortronics Division of Northrop Corporation.

The system, called "Decel," is an aircraft deceleration basin designed to eliminate overruns and to prevent undershooting by commercial type jets during landing and takeoff operations. The new concept was described by Dr. William F. Ballhaus, Nortronics general manager, at the Flight Safety Foundation Seminar group meeting in Chandler, Arizona.

Timberlake New Post Announced

Appointment of Corporate Vice-president Patrick W. Timberlake to head the International Division of Northrop Corporation has been announced by Thomas V. Jones, Northrop president.

General Timberlake (Lt. Gen., USAF, Ret.) succeeds J. G. Nettleton, who has resigned to accept a position with International Telephone & Telegraph. General Timberlake joined Northrop in 1957 as Corporate Vice-president, following his return to civilian life

(Continued on Page 3)

PATRICK W. TIMBERLAKE

ACME MOVES TO NEW OFFICES

Facts on the new Acme site:

Address, 5022 Triggs Street, Los Angeles 22.

Area location—bordering the Santa Ana Freeway, one half mile east of the Long Beach Freeway.

Telephone number has been changed from RIchmond 9-3331 to ANgelus 8-1301.

Size—six acres, with 70,000 square feet of manufacturing building space, plus loading docks, pickup facilities, and railway spur.

Offices—temporarily in manufacturing building. New offices of great architectural interest to be started immediately.

The Pace Program— An Important Tool

Northrop-Norair's PACE project, now elevated to section status, continues to score a series of outstanding achievements.

It now bids to become one of the nation's best tools for conservation of manpower. PACE findings, gained through research

By Aireporter

and through program installation in the Division and in other large American concerns, constitute extremely valuable guides that could serve a national effort. In case of war or other emergency, PACE would be of utmost importance in preventing waste of America's most precious resource, manpower.

D. N. PETERSEN—Mr. Petersen is director, Northrop-Norair PACE section.

PACE techniques, methods, and standards, are carefully catalogued and Norair PACE specialists are now in a broad training program to increase the know-how so that whenever and wherever called, accomplished Company men will be available to launch an effective program.

IRON CURTAIN

Even now, PACE through sustained industrial cost improvement serves the cause of the world economic struggle, which, although not a cannon and bayonet fray, is nonetheless a grim contest of survival between allied nations and the iron curtain countries.

L. J. RAJCZI — Supervisor, PACE section, responsible for Norair inplant PACE installations. Mr. Rajczi also heads PACE research and development in management techniques and human engineering.

PACE, under the leadership of D. N. Petersen, director, is being installed on contract in many different industries. These include aerospace, electronics, and hospitals. Negotiations are also in process where PACE will, in all likelihood, be placed with airlines, automotive and aerospace engine builders and with all branches of the military services.

A further step on the international level is now contemplated in which the Company will offer a series of lectures without fee—to be presented under the auspices of appropriate government agencies—to the young free nations overseas to assist them in their fast rising industrial programs.

BRITISH TEXTILES

Inquiry has also been recently received from the British textile industry groups asking for details on the PACE methods and procedures.

PACE accomplishments also extend to the vital hospital industry where measurements and charting of activities have already helped people get better care and helped hospital management better perform its difficult task of keeping such nonprofit institutions in the black ink.

Within the Norair Division, PACE continues extensive research and development in the fields of management controls research and human research. In addition and now in process, is the establishment of the Machine Utilization Program which will determine the proper coefficient of manpower when applied to modern machine tools.

GENERAL COUPLAND

Still another PACE innovation is development of the Production Activity Survey for determination of better methods in adding value to Division production.

Recent military presentations have been made to Brigadier General Don Coupland, commander, Ballistic Missile Center, Inglewood, California; Major General G. O. N. Lodoen, deputy chief of Staff for Logistics, Washington, D.C.; and Staff of U. S. Naval Postgraduate School, Monterey, California. Over 65 PACE lectures have been delivered before high-ranking military audiences in the past few months.

FAR BRIEFINGS

Over 118 briefings have been held for leading executives in the commercial and nondefense fields.

R. M. WRESTLER—Supervisor, PACE section, and responsible for all outside PACE installations, customer contact, training, and services and customer program auditing.

PACE philosophy has been presented by lectures to over 22 societies and colleges ranging in location from New York to California.

FULL-SCALE PACE BREIFING—Major General George O. N. Lodoen, deputy chief of Staff for Logistics, U. S. Army, Washington, D. C. and party visited Norair for full-scale PACE briefing. At left is D. N. Petersen, director, Norair PACE section, next is General Lodoen, also Army officials Colonel Paul Scordas, Los Angeles Ordnance District, U. S. Army; Lieutenant Benedict Popera, Los Angeles Ordnance District; Manual Garcia, office of the deputy chief of Staff for Logistics, Washington, D. C.; John O'Hair, U. S. Army, Fort Dietrich, Maryland; and Norair V-P Marketing John Alison.

Nolan

(Continued from Page 1)

work with Boeing, site activation work, the new B-70 contracts, Nortobraze, science study contracts and many others.

In reference to site activation, Mr. Nolan stated that Northrop-Norair was one of the first aerospace weapon system contractors to be awarded such work. "The Titan missile site will get the benefit of Norair's long experience on the Snark. We in turn are sternly dedicated to helping make this program the best in the nation," he said.

He discussed at length Division research and development activities in space payloads and in the advanced astronautical fields.

In commercial areas, Mr. Nolan outlined the important role Acme Metal Molding is destined to play should the Division decide to apply capabilities to the manufacture of housing, public buildings, and industrial structures.

He also reported at length on the growing capability of Northrop-Norair concept and design in the new generation of missile weapon systems.

"And our competitive position is excellent," he stated. "We lead the industry in cost improvement."

Following the address, Mr. Nolan devoted 30 minutes to answering questions put to him by members from the floor.

Earnings

(Continued from Page 1)

000 in the first quarter of last year.

The Company's sales backlog on October 30, 1960 amounted to $307,815,000 compared with $309,000,000 at the beginning of the quarter and $275,000,000 at the first quarter of last year.

Northrop-Norair News

VOL. 19 NO. 2

1001 E. Broadway, Hawthorne, Calif.

A NORTHROP CORPORATION PUBLICATION
Published every other Wednesday
NORAIR DIVISION

CHARLES BRADFORD, Editor

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Computer Changeover

(Continued from Page 1)

The 704 system will continue in capacity operation until the new equipment is processing at full speed.

In commenting on the change, General Manager Nolan stated, "The decision to standardize our computing and data processing operations in the IBM 7090 system follows extensive studies of current and long range Division needs.

"The new system has also received Corporate endorsement and is compatible with the overall Company policy on computing and data processing direction.

"I wish to emphasize," Mr. Nolan continued, "that the IBM 7090 system provides this Division with one of the finest tools for precision industrial control in existence. Management programs, financial operations, engineering and scientific projects, and manufacturing operations, all will benefit immeasurably.

"Also, we are proud in that Norair is among the first in industry to completely integrate computer processing of both scientific and financial data. We consider this accomplishment an outstanding technological advance."

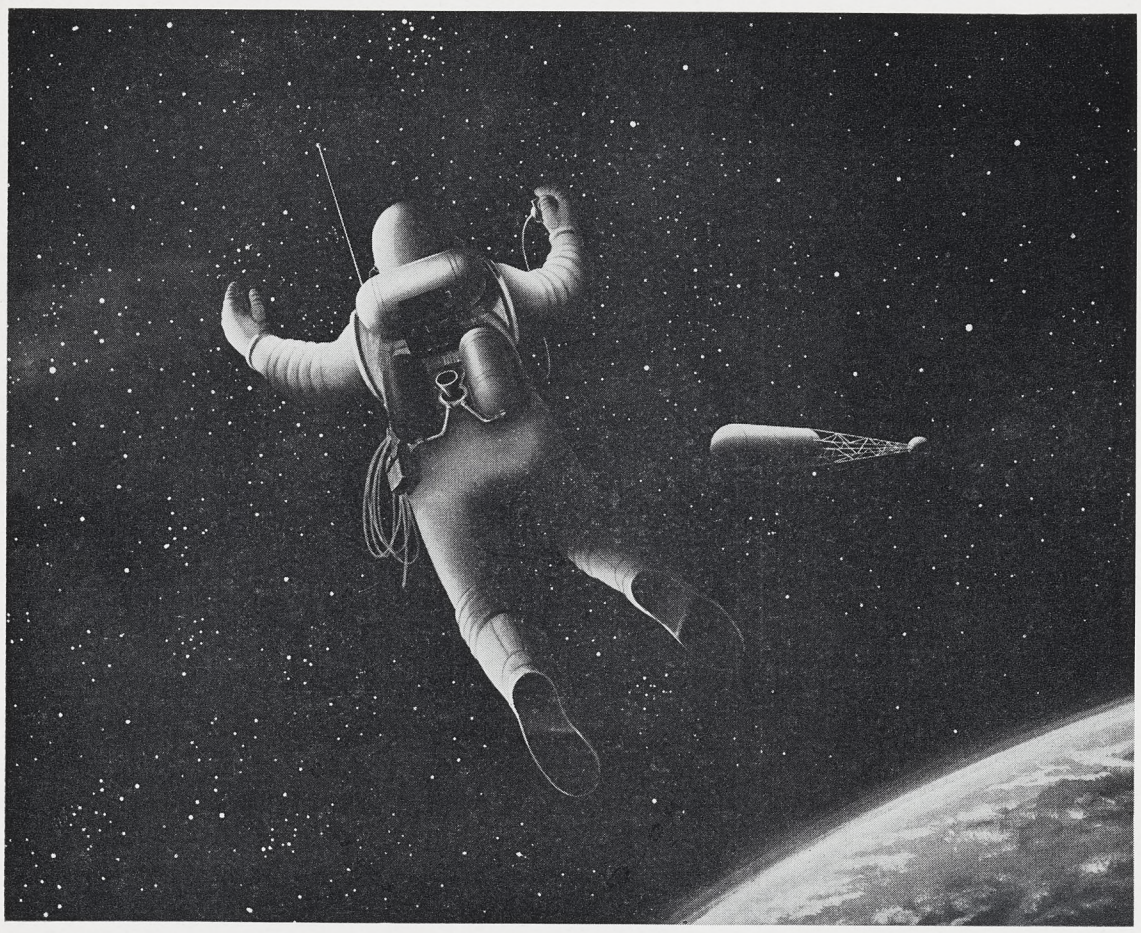
Norair's new Computing and Data Processing Center, a service organization, will perform a myriad of functions vital to Norair Division affairs, as well as provide services to other Divisions of Northrop.

The continuous flow of computer information will be but slightly interrupted by the changeover. When the 704 is moved back on December 9 and the 7090 is moved in, computing programs and the parts that Plant Engineering, Finance, and Engineering will play, have been so supported and coordinated that the giant electronic brains will doze but briefly—24 short hours, a mere speck of a moment in the span of time.

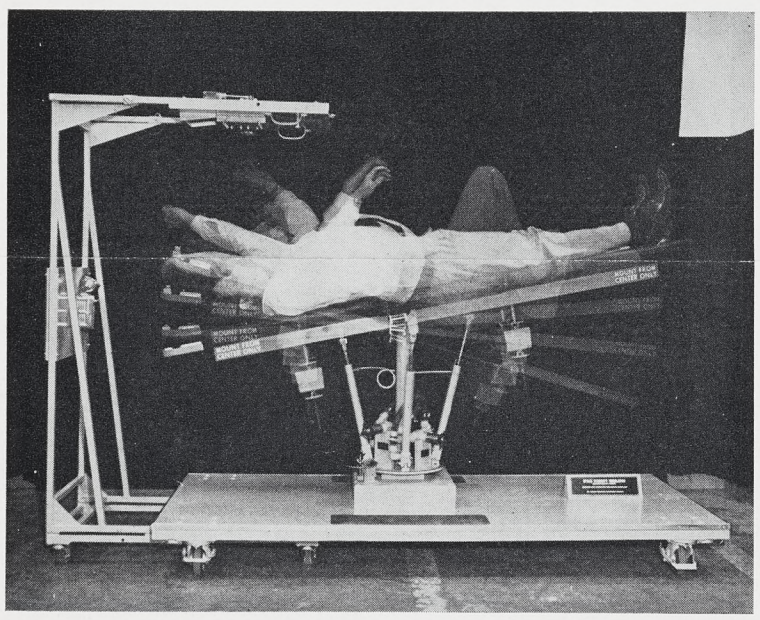
Middletown AMA

THE TALON—Middletown AMA personnel, who are preparing for the Northrop-Norair T-38A Talon to enter Air Force inventory, take time out for a briefing by Robert Keleher, Norair representative, assigned to MAAMA. The group includes, left to right, Joe Malesic, T-38 section chief; "Bob" Keleher, Anthony D. Mancuso, T-38 Logistics officer; and Captain Truett B. Smith, Jet Weapon System integrator. While the T-38A is destined for assignment to the Air Training Command as a basic pilot trainer, world-wide logistics support will be the responsibility of Middletown AMA. The first ATC base activated to receive the T-38A during 1961 will be Randolph AFB, Texas.

Space Stability Simulator



HOW DOES THIS MAN NAVIGATE—? Astronaut in orbit on maintenance or repair mission, must learn techniques of piloting his weightless body in environment of no resistance. Norair hardware provides ingenious training method. See man in motion.



SPACE STABILITY SIMULATOR—Man in hard vacuum beyond atmosphere will need intensive training. Norair Space Stability Simulator is a table on a centrally positioned ball joint which simulates point of thrust from portable space single man propulsion system. Astronaut free in space must learn directional movements, else as a toy balloon inflated and released, he would zip and spin helplessly in all directions.

Norair Visibility Log

Dan O'Halloran, chief, Quality Control—

Spoke before Texas section of Society for Nondestructive Testing, "NDT—Never Disclaim Testing," Dallas, November 17.

R. S. Catlin, manager, Quality Control—

Attended tenth annual AIA Quality Control Committee meeting, Statler Hilton, Dallas, November 29 and 30.

Paul Jensen, general supervisor, Aero and Propulsion Sciences Laboratories—

Addressed engineering students, "Opportunities in Aeronautical Engineering," Pasadena City College, December 6.

Dr. J. Gordon Wells, supervisor, Human Engineering branch—

Participated in panel discussion, "Biological Experimentation," at fifteenth annual American Rocket Society meeting and astronautical exposition, Shoreham Hotel, Washington, D.C., December 5-8.

Charley Eyres, assistant to the vice-president, Engineering—

Has been named chairman of the joint national summer meeting for the Institute of Aerospace Sciences and the American Rocket Society to be held June 13, 14, 15, 16, 1961, Ambassador Hotel. Upwards of 5000 scientists and engineers will attend.

Mr. Eyres is also president of the Northrop Management Club.

Multi-purpose Space Mission Training Aid

A newly invented Norair space training device has been catalogued by the Air Force's WADD Aero Medical Laboratory as the type of equipment logical to the training of astronauts in the not too distant future.

Called a Space Stability Simulator, the device was invented by Jim Watson, Systems Analysis group.

Primary purpose of the Space Stability Simulator is to teach astronauts the bodily mechanics of weight management should they be called to leave the hull of their ship and maneuver under the propulsive forces of a portable jet back-pack engine.

The trainer invention consists of a free platform which rests upon a single "thrust" point—similar to a ball joint or a universal joint.

Corner dampers—that can be monitored by the instructor—are provided to check weight over-control by the trainee.

Since presentation to WADD, the Space Stability Simulator has found other likely uses.

Norair scientists in Astro Systems and Research Laboratories are now studying its application to the training of Army sky divers. Placed in a wind tunnel, it would, under conditions of absolute control, simulate the long distance fall of a paratrooper. It is estimated that perfected sky diving techniques enabling soldiers to target their point of impact from stratospheric altitudes could place a striking force in battle position with the ultimate in surprise and effectiveness.

Another use, in the commercial area, is as a feature in amusement parks for thrilling tests of the fun seekers' astronautic ability.

FIRST 20-YEAR—Frieda Mooring, first 20-year Norcrafter on the distaff side, receives pin and congratulations on long service and fine record by Corporate Vice-president and Norair General Manager Dick Nolan. Frieda, Finance Norcrafter, came to work shortly before start of World War II. Presentation took place during 20-year pin presentation ceremonies for October and November.

NEWS BRIEFS

(Continued from Page 1)

DIVIDEND—The board of directors of Northrop Corporation has declared a quarterly dividend of 40 cents a share, payable December 17 to shareowners of record December 2 . . . Directors held their regular meeting at Northrop-Anaheim—the Systems Support Department of the Nortronics Division—in order to attend on-site briefings on the rapidly expanding operations at that facility . . . Anaheim is devoted to the design, development, and production of equipment for advanced defense systems. Current programs include manufacture of major components for the U.S. Army's Hawk ground-to-air missile system and electronic equipment for the U.S. Navy's Polaris submarine-launched missile sytem.

Timberlake

(Continued from Page 1)

after a 34-year military career.

"We look for an expansion in our international business," Mr. Jones said. "We have built strong relationships abroad, and Northrop's capabilities in advanced technologies have been growing in directions that can be of service to the nations of the free world." General Timberlake, who has been active in international programs for the Company in Europe and Japan for several years, is a graduate of the U. S. Military Academy. In World War II he commanded the Ninth Bomber Command in North Africa, was chief of staff of the Mediterranean Air Command and commanding general of the Eighth Air Force. Following World War II, he served in several key defense assignments including that as commander in chief of Allied Air Forces in Southern Europe.

Thunderbird Commander in T-38 Flight at Edwards AFB

Major Robert S. Fitzgerald, commander of the United States Air Force famed "Thunderbird" aerobatic team, is one of the latest to fly the USAF-Northrop supersonic T-38A Talon jet trainer.

Fitzgerald, sitting tandem in front of T-38 USAF Project Test Pilot, Captain Swart Nelson, spent nearly an hour putting the aircraft through its paces high above the desert floor.

"It's an amazingly clean bird and very easy to handle," he declared after the flight.

When it goes into the Air Training Command next March, the Talon will be America's first "space age" trainer and the first aircraft designed specifically for the supersonic training mission.

The five-member Thunderbird team of the 4520 Air Demonstration Squadron, headquartered at Nellis Air Force Base in Las Vegas, Nevada, is scheduled to make a State Department tour of Mexico and Guatemala next month.

Ohlinger

(Continued from Page 1)

Hanford, Washington. He also served as a consulting engineer to noted scientists Fermi, Urey, Compton, Wigner, and others.

Mr. Ohlinger came to Northrop in 1946 to lead research in application of nuclear energy for the propulsion of aircraft. During this work, his urgent need for larger and faster computers to handle atomic energy problems lead to the establishment of the Northrop Computing Center.

It is under his leadership that the Center has grown to its present stature—one of the most advanced and productive installations in the nation.

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

BARBER SHOP EQUIPMENT, 3-chair, $550. OS 9-7230. A

CHRISTMAS TREE, green, plastic, 6', w/ lights & trimming, $6. DA 4-1876. A

AUTO, Corvette, 1958, silver hardtop, seat belts, tonneau, $2300. FR 4-2782. A

FREIGHT TRAIN, American Flyer, on 6'x9' table, w/scenery, electrical switches, etc., cost $150, $50. PL 4-6818. A

TRUCK BOX, 98" step-side, w/bed & fenders, fits 1959 GMC or Chev., $140. PL 4-7947. A

DRAPES, custom-made, lark white, 1 pr., 85½" long, 12'5" wide, cost $150.; $70. Box 201. A

POODLES, tiny toys, 3 mos., lite silvers & black, AKC, champion backgrounds, $150. WH 1-8637. A

RANGE, gas, Western Holly, $35. TE 1-6462. A

CAMERA, De Jur, electra, auto-eye, turret-type, w/case, $75. JA 7-3979. A

GO KART, 2½ h.p. Clinton engine, padded seat, $65. UN 4-7673. A

HOUSE, 1-bdrm., close to schools & transportation, $10,000.; swing set, 2-swings & glider, $15. DA 4-6203. A

ELECTRIC BLANKET, dbl.-controls, $10.; car radio, Ford, $7.50; car heater, Southwind, $10.; DA 4-8663. A

AUTO, Cadillac, 1941, 4-dr. sedan, Model 62, $35. PL 7-2753. A

POOL TABLE, 4 cue sticks, & balls, $65. PL 4-7379. A

FREEZER, 20 cu. ft., 2-yrs-old, Ben Hur, $225. OR 7-4780. A

DISHWASHER, Hotpoint, portable, 10 setting capacity, $100. FR 8-3411. A

PIANO-ACCORDION, 120 bass, Borrelli, med-size, $50. OS 5-6311. A

HOUSEHOLD FURNISHINGS, coffee table, pink & blue tile, black wood, 6'x2', $40.; TV swivel stand, black, wrought iron, $10. OS 9-6324. A

BABY EQUIPMENT, feeding table, Baby Butler, cost $43.; $15.; horse, Wonder-Mare, spring-action-type, $8. TE 3-4191.

AUTO, Buick Special, 1956, conv., dyn., pow. steering, pow. brakes, radio, heater, w./w., tonneau cover, $825. HO 2-1550.

AUTO, 1956, Buick Estate Wagon, dyna-flow, power steering, radio & heater, whitewalls, blue & white, $750. LE 9-6203. A

AMPLIFIERS, power, 50W, hi fi, 2, $50. ea. LE 9-2806. A

AUTO, Alfa, 1900 c.c., touring coupe, 5 gears synchromeshed, wire wheels, r/h, warranty, $3400. WE 5-0285. A

HOUSE, 2-bdrm., custom den, combination bdrm. & bar, hardwood floors, thermostat heat, dbl. garage, 50'x150' lot, $15,200. Box 202. A

ROLLER SKATES, Snyder Precision, size 7, $40. Box 203. A

HOUSEHOLD EQUIPMENT, cabinet drawers, doors, various sizes, white, w/ chrome handles, wood-type, window, small, $1.; breaker box, 4-circuit electric, Homart, $4. DA 6-4195. A

GUN, revolver, S&W, K38, & holster, $55.; camera, Minicord III, w/enlarger & accessories, $75.; TV, 21", RCA, $20. FR 9-7775. A

RUGS, beige, 2, 8'x9', & approx. 13'x15', w/pad, just cleaned, cost $160.; $90. OR 7-2941. A

AUTO, Mercury, 1955, 2-dr. coupe, r/h, w/w, $550. OS 6-1382. A

RUG, approx. 9'x12', green & gray texture, $15. OR 7-4256. A

SECTIONAL, 2-pc., & chair, $25. OS 6-1291. A

AUTO, Studebaker Champion, V-8, 1952, h.t. coupe, o.d. trans., $250. PL 5-6084.

REFRIGERATOR, 9 cu. ft., pink, Crosley Shelvador, $60. DA 3-6848. A

SHOP EQUIPMENT, band saw & stand, 12", $15.; wood lathe w/chuck, tool, etc., $15.; spray gun & compressor, $25.; cream separator, $7.50.; wagon & scooter, lge. rubber tires, $5.; refrig. Coldspot, $25. OS 6-5253. A

MOVIE PROJECTOR, Keystone, 8mm, $65.; movie camera, 8mm, Bell & Howell, #220, $25.; power tools, Craftsman, floating beam jig saw, $50.; metal lathe, $44.; 6" planer, $48.; band saw, $36.; 6" jointer, $69; belt sander, $10.; flex shaft, ¼ h.p., $7.50. FA 8-2800. A

LAWNMOWER, Penn, Jr., cost $48.; $15. PL 7-6204. A

WANTED TO BUY

DRAFTING MACHINE, Bruning, Post or Dietzen w/scales. OS 9-9978. B

TRAILER, camping or teardrop. Box 204.

HAIR CURLING IRON, old-fashion-type. DA 9-1323. B

FOR TRADE

MIKE, 1", satin-finish, trade for transistor radio. DU 2-2042. C

NRC Campers Meet Tonight

There will be a potluck dinner for the NRC Camping Club tonight at the Clubhouse, it is announced by Commissioner Fred Armstrong.

All Norcrafters are invited to attend. Bring an entree, salad, dessert, or anything that suits the appetite.

Coffee will be furnished, but Fred asks that Norcrafters bring their own table service.

THE ALASKAN
A Steak and Egg Breakfast
Each Tuesday, 5:30 a.m. to 8 a.m.
Price—One Dollar
All Cafeterias

RENTALS OFFERED

APTS, 1 & 2 bdrm., unfurnished, redecorated, w/garage, 2 miles from Northrop, $75. & $90. OR 8-9406. E

BACHELOR APT., furnished, near beach, stores, civic center, $65. FR 4-3365. E

APTS., 2, 1-bdrm, furnished, $85.; bachelor, furn., $60. PL 8-6890. E

RENTALS WANTED

ROOMERS, 2, male, to share room, night shift workers preferred. Board optional. 10 min. from Northrop. DA 4-6539. F

PERSONALS

WISH to contact collectors of aircraft 3-view drawings, 8"x10" preferred, to compare & trade. OR 2-7624. L

FOR SALE OR TRADE

AUTO, Ford, 1946, sedan, overhauled engine, radio, gas-type heater, $75. or trade for power tools, drill press, band saw. FR 5-0813. M

REPEATING RIFLE, .22 Winchester, $25. or trade for binoculars, 7x35. PL 9-4875.

RIDES WANTED

7 a.m. — 3:45 p.m.

SEPULVEDA BLVD. & MADISON ST., Torrance. R. A. Reamer, ext. 2171, DA 6-4898. 2

7:30 a.m. — 4:15 p.m.

WOODRUFF & IMPERIAL HWY., Norwalk. George Nosacka, ext. 788, UN 4-7673. 3

PALOS VERDES BLVD. & SEPULVEDA, Torrance. Marjorie Dunnett, ext. 1213, FR 5-6718. 3

8 a.m. — 4:45 p.m.

PROSPECT & TULITA, So. Redondo Beach. Eleanor Markert, ext. 1372, FR 6-3352. 5

DEL AMO & PALOS VERDE ST., Lakewood. Jim Greenough, ext. 1401, TO 6-5703. 5

LONG BEACH BLVD. & IOWA AVE., South Gate. Sheila Ondrasek, ext. 1897. 5

McCONNEL & CREIGHTON, Los Angeles. Louissa Domnikov, ext. 1815, OR 0-0886. 5

4:45 p.m. — 1:15 a.m.

PIER AVE. & REDONDO BEACH BLVD., Redondo Beach. Marie Prulitsky, ext. 1471, FR 6-3549. 8

RIDES OFFERED

7 a.m. — 3:45 p.m.

VALLEY VIEW & ROSECRANS, La Mirada. Dennis Cornett, WH 4-1171. 12

8 a.m. — 4:45 p.m.

DEL AMO & PALOS VERDE ST., Lakewood. Jim Greenough, ext. 1401, TO 6-5703. 15

HIP, HIP, YIPPEE—! The big surprise promised by Cafeteria Manager Freddie Wolfe, left, for Steak-O-Rama week just past, was—you saw it—western costume for the staff. Here ready for the rodeo, from left are Paula Busche, John Cabias, Frank Cox, Robert Silva, Mildred Wallace, Ramath Dipboye, Vi Murphy, Mildred Holley, Marie Joos, Marion Gard, Noreen Applegate, Lois Bennett, Ruby Soderlund, and James Jones.

NRC Golf—Fox Hills

Entries are now open for the NRC Christmas golf tournament.

Tourney will take place December 27 and 28, the first day at Fox Hills, the second day at Baldwin Hills.

There is room for 28 foursomes.

Sorry, entries can not be taken by telephone. Forms and fee must be delivered to Personnel Activities. Last day for entries is December 22.

The total fee is $8—green fee, $6, prize fund, $2.

Each golfer will play two days for a total of 36 holes.

In addition to the tourney, there will be a putting contest and a longest drive contest.

Prizes galore, says Bill Putnam. Trophies also.

PUT 'ER THERE, PARD—John Cabias dishes up tender tasties to hungry Norcrafter folk during Steak-O-Rama week. Next big roundup will be at Plant Three after the holidays. Freddie also has other special day plans likely to make the headlines. Keep in touch.

NRC Christmas Party Set All Juniors are Invited

Biggest headline for the holidays is the annual NRC Christmas party.

All Norcrafter moms and dads are asked to bring all juniors down to the NRC Clubhouse, 175 North Hawthorne Boulevard, on Sunday, December 18, at 12 o'clock noon. The festivities will continue until 4 p.m.

Santa Claus will be there and each child will have the opportunity of sitting on his lap and to put in orders for stocking material to be delivered Christmas Eve.

The NRC will provide sleighloads of toys.

There will also be scads of ice cream and candy.

This is a combined Norair-Nortronics party for the kiddies.

Pass the word.

Christmas comes but once a year.

LAS VEGAS DAZE LAST CALL FOR

Last call for Las Vegas Daze.

The NRC Travel Club announces that deadline has been extended for Gadabout holiday reservations to Las Vegas.

Price is $37.92 which includes the train fare to Vegas, three nights at the Hacienda on the strip, chartered bus service, plus meals, plus parties.

The trip will get underway December 26. Return will be December 29.

All details are available at Personnel Activities.

Call extension 2784.

RAG DOLLS DUE ON DECEMBER 9

Deadline for rag dolls is Friday, December 9.

Completed dolls should be turned in to Personnel Activities on that day.

Prizes for the winners will be savings bonds and tickets to Disneyland.

The dolls will go on display in the Cafeteria next week.

AF SEEKS ART ON HISTORY OF AVIATION

Works of art, depicting the story of flight from early days to the present are the object of an Air Force-wide search headed by the Office of Pictorial Art, Headquarters USAF.

Contemporary activities of the Air Force have been well documented by 125 illustrators and artists who have contributed their art to the Air Force collection under a program begun in 1954.

The Air Force collection, however, lacks works picturing historical events from the earliest days of military flight through World War II.

Lieutenant Col. George C. Bales, who heads the effort to increase the AF art collection, has asked for aid in locating prints, drawings and paintings pertaining to this period.

Persons interested in contributing art work or knowing the location of art with historical significance are urged to contact the Office of Pictorial Art, Headquarters USAF, Washington 25, D.C.

IN THE CORRAL—Bob Silva and John Cabias herd them delicious top sirloins into eatin' formation as Norcrafters outside set up clamor for a sharp knife and elbowroom.

LEAGUE PLAY UNDERWAY ON NRC BASKETBALL

NRC basketball league play is now underway, says Bill Greene, commissioner.

First games were played last night at Leuzinger men's gym, Leuzinger High School, 4118 Rosecrans, Lawndale.

League play continues every Tuesday night.

Players looking for a team should contact Personnel Activities, extension 2784, or report to scorekeeper before game time.

Open practice for all players is held every Saturday at the Leuzinger girl's gym—10 a.m. to 12:30 p.m.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, December 21, 1960

HAWTHORNE, EDWARDS AFB, PALMDALE — RAPID CITY, PRESQUE ISLE, EL PASO

NORTHROP-NORAIR

NEWS BRIEFS

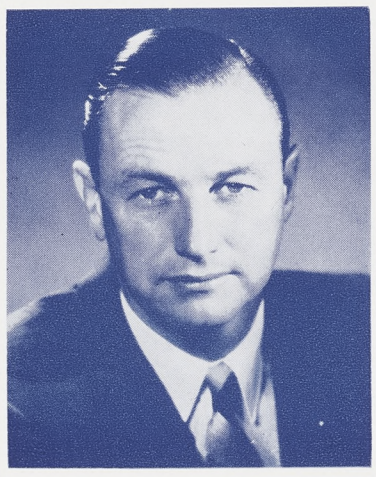
TECHNICAL SESSIONS—A series of management discussion conferences for Norair key personnel on the physical sciences and advanced technologies has been scheduled to start 5 January, it has been announced by Corporate Vice-president and Norair General Manager Dick Nolan. Program subjects listed include, radiation environment, bioastronautics, hyperenvironment, cryogenics, plasma physics, space age materials. First discussion will be conducted by Dr. Samuel Herrick, professor of astronomy, UCLA. Among other science leaders scheduled for subsequent discussions are Dr. Milton Plesset, professor of applied theoretical physics, Graduate School of Cal Tech and consultant to Norair Nuclear technologies; and Dr. Dave Woods, associate professor of mechanical engineering, specializing in physical metallurgy, Cal Tech. From Nortronics, Dr. K. N. Satayendra, director of Research. From Norair will be, Dr. Ludwig Roth, director, Research section; Royal Jackman, chief, Engineering Laboratories group; Dr. J. Gordon Wells, supervisor, Human Engineering branch; Dr. Charles F. Lombard, research scientist; Dr. R. G. Lindberg, head of Bioastronautics Laboratory; Roger Sampson, head of Plasma Dynamics Laboratory; and Welko Gasich, director, Advanced Systems section.

TOP SHOWING—Colonel Harold T. Morris, Northrop Corporation Air Force Plant representative, announces that the Northrop Corporation and all Divisions—Norair, Radioplane, Nortronics—stand 100 per cent concurrent on all contracts, on time, with all commitments met. Stated Colonel Morris, "Effective communication and a consistent atmosphere of cooperation and understanding between Northrop management and this office—particularly the Production Division, Jess L. Dennis, chief—is largely responsible for such a fine showing. When it is realized that even the smallest schedule deliquency or commitment failure must set up a chain reaction of military cost spirals, the accomplishment becomes all the more significant. I wish to congratulate all contractor and Air Force personnel whose efforts and attitude have helped set this record."

WSPACS—To AMC Headquarters last week on WSPACS policy meeting—Jack Mannion, assistant to the general manager, and Lee Ohlinger, director, Norair Computing and Datamation Center. Mr. Mannion officially represented Company in the discussion. Mr. Ohlinger is WSPACS industry coordinator. WSPACS, which stands for Weapons System Programming and Control Systems, is a joint Air Force-industry program which seeks to develop scientific management techniques for contract and budget control, particularly in the areas of reprogramming. WSPACS held its

(Continued on Page 2)

A Merry Christmas And Happy New Year



To all Northrop Personnel:

As we approach the end of 1960, I wish to express my appreciation for the contributions each of you has made in the past 12 months toward our goal of a stronger and ever advancing company. We have made gratifying progress in 1960. With your continuing efforts, we can look forward to even greater strides ahead in 1961.

Mrs. Jones and I extend to all of you and your families our warmest greetings for the Christmas Holidays and our best wishes for a Happy New Year.

THOMAS V. JONES
Northrop Corporation
President

To all Norcrafters:

It is with sincere pleasure that Mrs. Nolan and I bring to all of you our very best wishes for the holiday season.

The past year has been one of many accomplishments. We have increased our capabilities, and have certainly added to our reputation for building top quality products, on schedule, and at a price the nation's budget can afford.

Let me extend congratulations for a 1960 job well done. With your fine support, we will score even greater advances in 1961.

Again, Merry Christmas and Happy New Year to all.

DICK NOLAN
Corporate Vice-president
and Norair General Manager

Shareowners Annual

SHAREOWNERS MEET—Northrop Corporation shareowners held annual meeting, Tuesday, December 13 at Products Display building. Guests heard Thomas V. Jones, president and chief executive officer, at podium, outline Company progress and future prospects, saw interesting displays of Company products. Included were Norair's Laminar Flow Control, the T-38 Talon, and large photos of the Titan Rapid City activation contract. In photo at speaker's table in addition to Mr. Jones, L-R, Richard W. Millar, member of the board and managing partner, Wm. R. Staats and Company; Robert R. Miller, member of the board and senior vice-president; William C. McDuffie, chairman of the board; George Gore, secretary; John O'Melveny, member of the board and senior partner, O'Melveny and Myers; A. E. Ponting, member of the board and senior vice-president, Blyth and Company, Inc.; A. C. Rubel, member of the board and former president, Union Oil Company. Not shown, James Allen, member of the board and vice-president and assistant to the president; Earle M. Jorgensen, member of the board and president, Earle M. Jorgensen Company; and Dr. H. P. Robertson, member of the board and professor of mathematical physics, California Institute of Technology.

Norair Makes Advance in Space Engine Research

What is believed to be the first direct measurement of continuous thrust from a magnetogasdynamics engine is being attained regularly by Northrop-Norair scientists, it has been announced.

The engine, forerunner of a type expected to propel manned vehicles during interplanetary flight, is in operation in the Advanced Research Center.

Experimental research in magnetogasdynamics propulsion is carried out under the direction of Sterge T. Demetriades, head of Norair's Space Propulsion and Power Laboratory.

In working with the experimental MGD engine, Mr. Demetriades uses ionized nitrogen gas as a propulsive fluid.

The ionized nitrogen is injected into a 20-foot vacuum tank at an initial speed of 16,000 feet a second. As it enters the chamber, this plasma is directed into a region of crossed electric and magnetic fields where it is accelerated to an equivalent velocity of 40,000 fps.

Measurements of the reaction forces have shown thrust levels on the order of two pounds, maintained for as long as one minute. This is believed to be the first magnetosgasdynamics facility where thrust has been directly noted. The few other MGD engines in existence measure indirect indications of thrust, using jet vanes or pressure probes. The Northrop engine measures thrust directly, using a three degrees-of-freedom thrust balance and strain gages.

"The principle on which this engine is based," said Mr. Demetriades, "is the fact that the ionized nitrogen acts as a current-

(Continued on Page 3)

NEWS BRIEFS

(Continued from Page 1)

first policy meeting at Norair Science Center in February 1960 under leadership of Major General Austin Davis, AMC director, Procurement and Production, when Air Force team from Wright-Patterson met with leading aerospace firms . . . WSPACS objectives defined—to develop a predictive tool to (1) readily and adequately reflect national and regional economic impact of program shifts, (2) and to better control progress and expenditures when need for Air Force reprogramming arises.

T-38 AT EGLIN—T-38A in climatic test at Eglin Air Force Base, Florida, sends Norcrafters a Merry Christmas message in the real tradition. Airplane is undergoing weather typical of the season, to say the least. Talon is performing up to spec at a frigid shivering minus 65 degrees, in Eglin's giant "cold" hangar, states Norair Tech Rep Cliff Shelton in Field Support Report received at presstime.

N-156F—N-156F fighter, sister airplane to the T-38 Talon, has demonstrated that it more than meets the design requirements established for readiness and reliability in recent Palmdale military flight program, it is announced by George Douglas, vice-president, Engineering. The N-156F entered the program 10 November scheduled for 40 flights over six-week period. Mission was accomplished in 24 days with 51 flights. In addition to exceeding flight and time schedule, the airplane also completed the program with substantial underrun in man-hours. Fifteen military pilot checkouts were conducted as part of the exercise.

Middletown AMA and T-38

MAAMA AIRCRAFT DIVISION CHIEF—Colonel Howard C. Huff, chief, Aircraft Division, Middletown AMA, prime depot for T-38 Talon, visited Norair for a firsthand look at the Talon and Norair production facilities, is shown here after plant arrival with Dick Nolan, Corporate vice-president and Norair general manager, and A. C. Morgan, vice-president, Contracts and Service.

MAAMA INSTRUCTOR PILOT CHECKED OUT IN TALON—Captain T. B. Smith, instructor pilot at MAAMA, is shown here accepting the first flight Talon Achievement Award and Talon Claw from Mike Corba, Norair test pilot.

Buy BONDS

RIDES WANTED

7 a.m. — 3:45 p.m.

DEL AMO & PALO VERDE, Lakewood. C. W. Dahl, ext. 548, HA 5-4435. 2

7:30 a.m. — 4:15 p.m.

CRENSHAW & 63rd, Los Angeles. Marjorie Lockhart, PL 3-0500. 3

SAN BERNARDINO FWY. & VINCENT AVE., West Covina. James F. Erath, ext. 788, ED 9-7145. 3

8 a.m. — 4:45 p.m.

PRAIRIE AVE. & 129th ST., Hawthorne. Marilyn Sue Geltosky, ext. 1861. 5

WESTERN AVE. & 160th, Gardena. Judith K. Starnes, ext. 1678. 5

RIDES OFFERED

7 a.m. — 3:45 p.m.

DEL AMO & PALO VERDE, Lakewood. C. W. Dahl, ext. 548, HA 5-4435. 12

7:30 a.m. — 4:15 p.m.

SAN BERNARDINO FWY. & VINCENT AVE., West Covina. James F. Erath, ext. 788, ED 9-7145. 13

IMPERIAL AVE. & WOODRUFF AVE., Norwalk. George Nosacka, ext. 788, UN 4-7673. 13

FASTER ACTION DEVELOPED ON NEW DCR SYSTEM

Norair's engineering drawing change request system has been changed to provide a quicker disposition service from Engineering to Manufacturing, Quality Control, Materiel, and Customer Service organizations.

Under the new system, Liaison Engineering is charged with the responsibility of administrating the complete program.

Engineering change requests will be submitted on Form 20-5A, Document Change Request "DCR" and forwarded to Liaison Engineering's Harry Kline, through the area liaison engineer. Here the requests will be screened. Non-complex ones will be promptly answered by Liaison Engineering. Others of a more complex nature will be processed to the design organizations for timely disposition.

Details can be found in Standard Practice Procedure 6-6.

This overall system, which was developed by Administrative Services, is designed to essentially reduce DCR backlog, provide responsibility and control, and expedite answers.

SAMPE BECOMES NATIONAL GROUP

The Society of Aerospace Materials and Process Engineers has become a national organization, it has been announced.

The headquarters will be in Los Angeles.

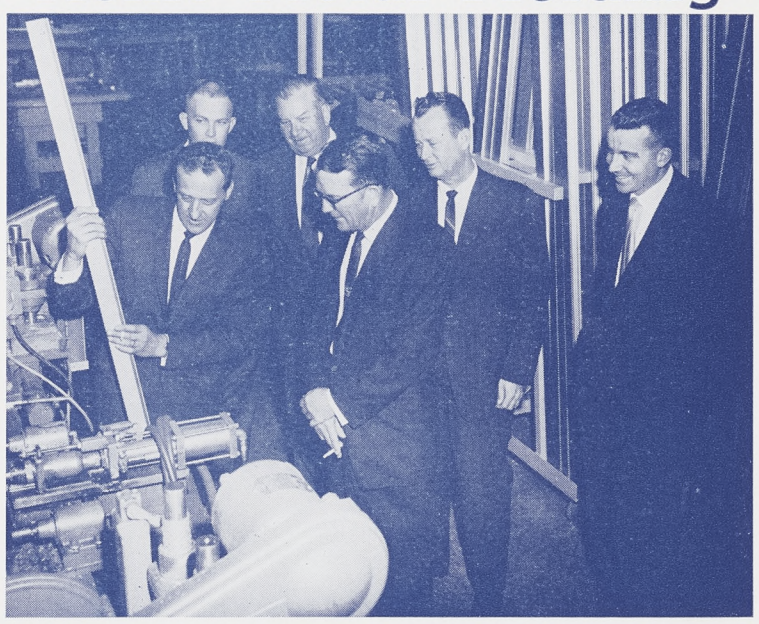
SAMPE was founded in this area in 1944 and has expanded to three chapters.

The Los Angeles Chapter of SAMPE is headed for the second year by Norair Engineer John Seymour, Product Analysis and Engineering Practices group of the Materials Research and Product Analysis branch.

Dinner meetings are held the third Monday of each month.

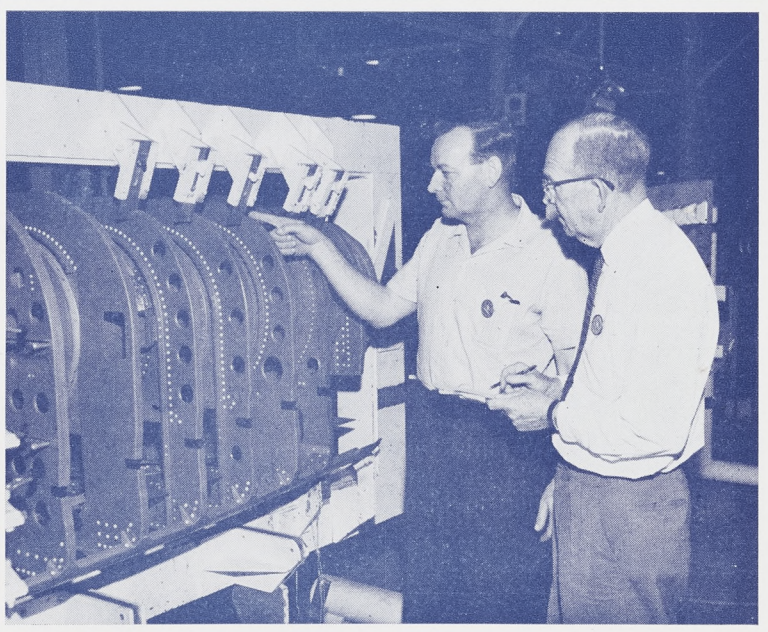
Norcrafters whose professional interests are identified with the SAMPE program are cordially invited to attend meetings.

Acme Metal Molding



ACME'S NEW PLANT—Corporate Vice-president and Norair General Manager Dick Nolan with Bob Lloyd, vice-president, Manufacturing, visit Acme Metal Molding's new plant which borders the Santa Ana Freeway at 5022 Triggs Street. Observing operation of one of Acme's highly efficient automatic door stile routers which are already turning out parts at the new location, are from left, Ralph Froelich, formerly foreman, Norair's 5503, now Acme production manager; Don White, Acme controller; Thomas Beyrle, Acme president; Mr. Nolan, Mr. Lloyd, T. A. Beyrle, Acme vice-president-general manager.

RETURN TO HAWTHORNE—Mr. Beyrle, right, does honors for Acme as Mr. Lloyd and Mr. Nolan board Company helicopter for quick return flight to Northrop Field. Stan Winchester is pilot. Helicopter lands comfortably on Acme grounds. Trip by air is only matter of minutes. Crowded crosstown streets would take nearly an hour.



NEW AND FASTER SYSTEM—Harry Kline, right, group engineer and longtime Norair liaison engineer, and C. E. Underwood, structures assembler, 5753, review new DCR—drawing change request — system which has been developed for quicker disposition action. Part shown is T-38 engine ducting assembly.

Northrop-Norair News

VOL. 19 NO. 3

1001 E. Broadway, Hawthorne, Calif.

A NORTHROP CORPORATION PUBLICATION

Published every other Wednesday

NORAIR DIVISION

CHARLES BRADFORD, Editor

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Northrop Junior Wins "Pop" Warner Trophy

PROUD PIGSKINNER—Elwood Bruce, 11 years and number 11 on his "Pop" Warner football team is awarded trophy for best essay on "What 'Pop' Warner Football Means to Me". Just as proud as Elwood are mom and dad—Mr. and Mrs. E. H. Bruce. Dad is a Norcrafter and works in Logistics.

Elwood Bruce, 11, son of E. H. Bruce, Logistics, has been awarded the trophy for the outstanding essay on "What 'Pop' Warner Football Means to Me."

Elwood, sixth grader, Eucalyptus School, Hawthorne, is the right end on the Lions, a "Pop" Warner Pee-Wee division team. He is high scorer on his eleven with 36 points. He plays right line backer on defense. He weighs 83 pounds.

The Lion team finished in a second place tie in the League standings.

The award winning essay was chosen from those written by the 156 boys in the division. The league consists of over 400 boys.

The annual awards banquet was held at the Mayflower Ballroom in downtown Los Angeles. Attendees included Mrs. Jimmy Doolittle, wife of General Doolittle, the honorary commissioner of the League; Ronnie Mix and Dave Kocourek of the Los Angeles Chargers, and numerous other guests, officers, coaches, parents and players of the League.

"Pop" Warner Football, places emphasis on scholastic accomplishment over athletics, and is primarily intended to develop citizenship and good sportsmanship in the young men of America.

Space Engine Advance

(Continued from Page 1)

carrying conductor while passing through the magnetic field set up in the engine. As the gas passes through the field, magnetic forces are exerted on the moving ions and electrons within the gas, and this force is transmitted to the gas, causing it to accelerate to great speeds.

"This type of engine will be useful for orbital propulsion at the fringes of the atmosphere," Demetriades explained. "It will be first placed in orbit around the earth by chemical boosters similar to those now in operation, and will be used by an orbital vehicle which collects and stores air. This air will be used as reaction mass for interplanetary trips. Using relatively limited thrusts of five to five-hundred pounds, produced by refined models of the engine now working in our lab, interplanetary roundtrips will be completed in approximately 20 days travel time."

Power requirements for the engine are high in terms of electrical energy, Mr. Demetriades indicated, and will be met through the use of a nuclear reactor rather than solar collector cells.

A prototype model of the engine is being designed now, and the preliminary design details will be submitted to the government. Laboratory tests are continuing with the experimental engine to reach increased thrust levels for durations exceeding two minutes.

BILL LURIE IN CHAMPIONSHIP TENNIS WIN

Norcrafter Bill Lurie, top seeded senior tennis competitor, won the men's singles title in the 12th annual National Senior Hard-Court tennis championships held recently at La Jolla.

In winning the title, Bill downed third-ranked Chauncey Steele of Cambridge, Mass., 6-4, 3-6, 6-2.

NRC STAGES "PHASE OUT" FLORIDA PARTY

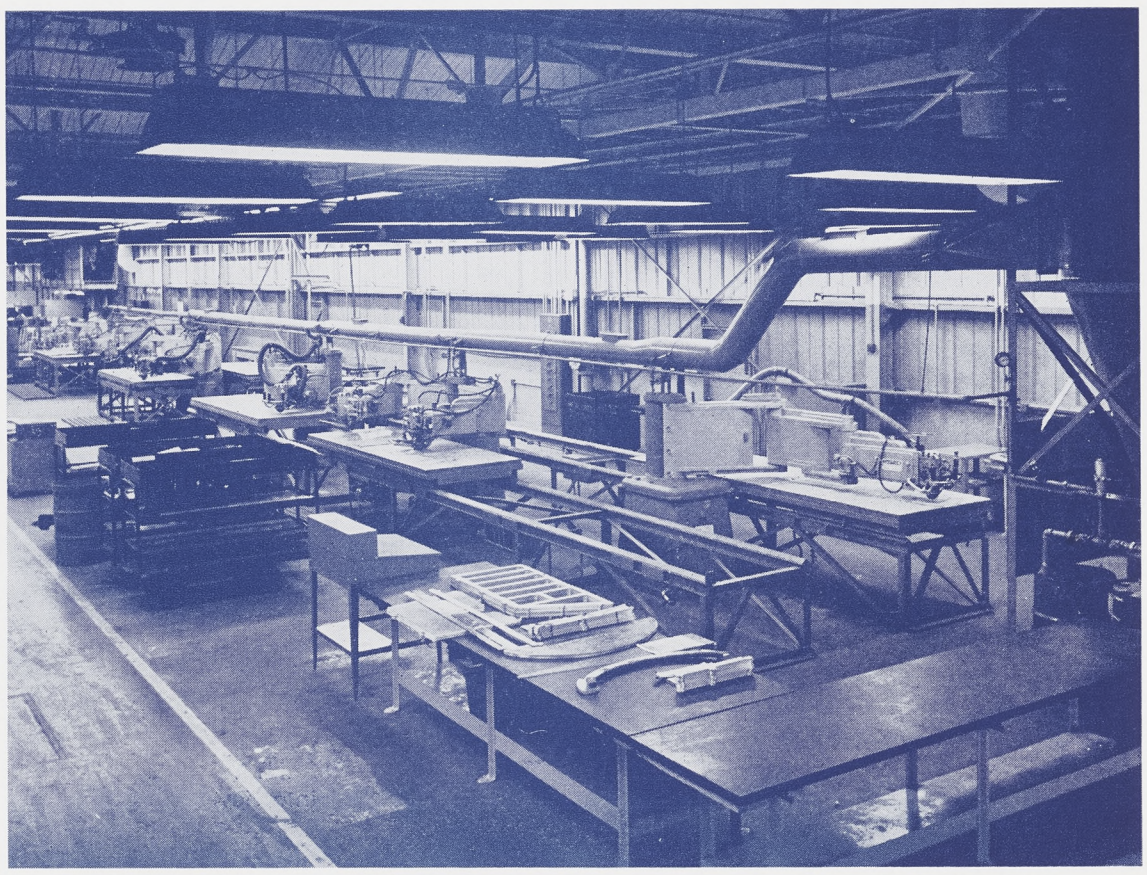
Final social for Florida Norcrafters was held Saturday, November 26, when the Northrop Recreation Club staged a "phase out" party with over 200 Norcrafters in attendance.

The party was held in the Macado Room, Koko Motel, Cocoa Beach.

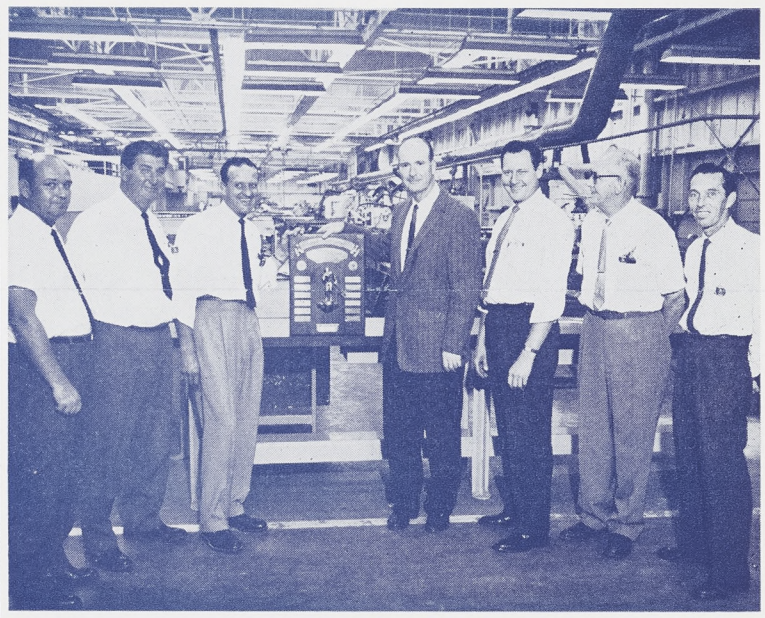
Guests from the home plant included, George Douglas, vice-president, Engineering; Milt Kuska, manager, Laminar Flow Control Technological Airplane Project; and Hap Herdrich, assistant to the general manager. Also in attendance was Colonel Ralph McKee and his staff, SM-62 Project office, Patrick Air Force Base.

Combo music was furnished throughout the evening. Peggy Lloyd, Miami headliner, was feature of the evening.

Sheet Metal Fab Twice Honored



CLEANEST AND MOST EFFICIENT—Double honor is scored by Sheet Metal Fabrication, 5503, in winning the plant good housekeeping award as well as achieving top factory performance realization. All of which helps to prove that program of orderliness can pay dividends in efficiency. Photo shows 5503's router area a sparkling example of Norair good housekeeping.



TROPHY WINNERS—Sheet Metal Fabrication supervision whose area lead the plant in good housekeeping, also in performance realization. From left are Foremen, Charles Hutcheson, Joe Schorle, Ralph Froelich, nights; (Ralph has now moved to Acme Metal Molding) R. C. (Red) Howarth, general foreman; and Foremen Bert Fremgen, Herb Chastain, and Paul Simko.

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

TRUNDLE BEDS, wrought iron twin-size, w/mattresses, cost $100; $30. OS 6-6074.

AUTO, Ford, 1952, 4-dr, radio, overdrive, heater, Goodyear Safety tubes, $350. FR 5-4605. A

AUTO, T-Bird, 1957, p/s, p/b, r&h, w/w, new black paint, h/t, $2500. FR 2-6847.

TV CONSOLE, 15", $30. FR 8-1894. A

DRAPERIES, custom-made, lt. beige, $22.50. FA 8-0450. A

WASHING MACHINE, automatic, Sears, $39. PL 4-7618. A

VACUUM CLEANER, Electrolux, w/attach., $25.; 3 doll beds, w/adjustable sides, $2.25 ea. FR 4-8036. A

BARBER SHOP EQUIPMENT, 3-chair, $550. OS 9-7230. A

REFRIGERATOR, 1959, Westinghouse, 11 cu. ft., $160. DA 9-4579. A

LAWNMOWER, 17", 6-blade, $7.50. PL 4-9637. A

REVOLVER, Smith & Wesson K-38, 6" barrel, w/holster, adjustable rear sights w/target hammer, $55. PL 1-2855. A

RANGE, lae., electric, 4-burner, oven, 3-storage drawers, $40. OS 9-2433. A

GYM EQUIPMENT, bar bell & dumbbells, 100-lb., $25. DA 4-4106. A

CAMERA, Yashika Y-16, w/case, flash, film, filters, $25. HO 4-6094. A

REVOLVER, .22 cal., Colt, official police-model, 6" barrel, w/holster, extra grips, original box, cleaning brush, factory fired target, factory papers, $55. UN 3-0038. A

TALKING MYNAH BIRD, w/cage, $50. FR 2-9354. A

WRISTWATCH, Gruen, lady's, 17-jewel, $35. AX 3-8452. A

ELECTRIC TRAIN, Lionel, complete layout, mounted, $45. EA 2-3420. A

AUTO, Austin Healey, 1954, $45. FR 9-5619. A

TOY POODLE, male, white, 5-mos-old, AKC registered, $125. FR 1-2983. A

4-BDRM. HOUSE, large covered patio, 3-yr-old, $23,750. DA 9-8729. A

FURNITURE, 2-pc. green sectional, $35.; drop leaf dining table, blonde, & 4 chairs, $25.; coffee table, blonde, $5.; soft chair, $10.; table lamps, 2, gray & green, $6. FR 5-9640. A

GOLF CLUBS, Kroyoon, matched set of woods & irons, leather club covers, nylon bag, $60. FR 2-0392. A

AUTO, Buick Special, 1956, conv., radio, heater, dyn., p. steering, p. brakes, w/w, tonneau cover, $750. HO 2-1550.

AUTO, Oldsmobile, 1949, 6-cyl. 4-dr. sedan w/automatic trans., $150. GE 0-1245. A

AUTOS, Chevrolet, 1954, 2-dr., stick shift, good tires & engine, $395; Chevrolet Impala, 1959, radio, heater, air-conditioning, $1795. FR 8-5117. A

AUTO, Jaguar 2.4, 1957, r/h, 4-speed trans., white & red leather, $1625. FR 7-1989. A

RUGS, 2, 9'x12', 8'x9', w/pads, wine, white, gray & beige design, $35. OS 6-1291. A

BICYCLE, sidewalk-type, $5; electric motor, 1/10 h.p., 450-1800 rpm, $15. FR 5-8804. A

BABY EQUIPMENT, crib, mattress, hi-chair, musical rocking chair, $25. PL 5-7521. A

WANTED TO BUY

BEDROOM SET, w/double bed. PL 7-2753. B

FOR TRADE

BOAT, 16' fiberglass, 60 h.p., Ford inbd., w/trailer & accessories. Will trade for pick-up truck, any make or model in good condition and of equal value. GE 1-5996. C

RENTALS OFFERED

CABIN, Green Valley Lake, sleeps 12, $55. wk. DA 4-5961. E

APTS, furnished, 1-bdrm., $85. & 1 bachelor, $60. blk. to ocean, utilities paid, FR 6-8040. E

APT., unfurn., 1-bdrm., 1 mile from Northrop, built-in oven & range, refrigerator, drapes, w/w carpet, $85. OS 5-4429. E

APT., deluxe, 3-bdrm., 2-bath, unfurn., 4 short blocks to Northrop, lae. rooms & closets, disposal, carport w/storage bin, hardwood floors, $130. OS 6-1574.

RENTALS OFFERED

APT., deluxe, 2-bdrm., built-ins, drapes, garage, $110 mo. OS 6-6690. E

DUPLEX, unfurn., 2-bdrm., near South Bay shopping, disposal, carport, $90 mo. FR 9-0548. E

PERSONALS

WISH to contact collectors of aircraft 3-view drawings, 8"x10" preferred, to compare & trade. OR 2-7624. L

SKINDIVERS TO ENSENADA NEXT

The NRC Skindiving Club, Ralph Gonzales, commissioner, announces that there will be a trip to Ensenada, Mexico during the holiday period, December 26 through December 30.

Trip particulars may be obtained by calling Personnel Activities, extension 2784.

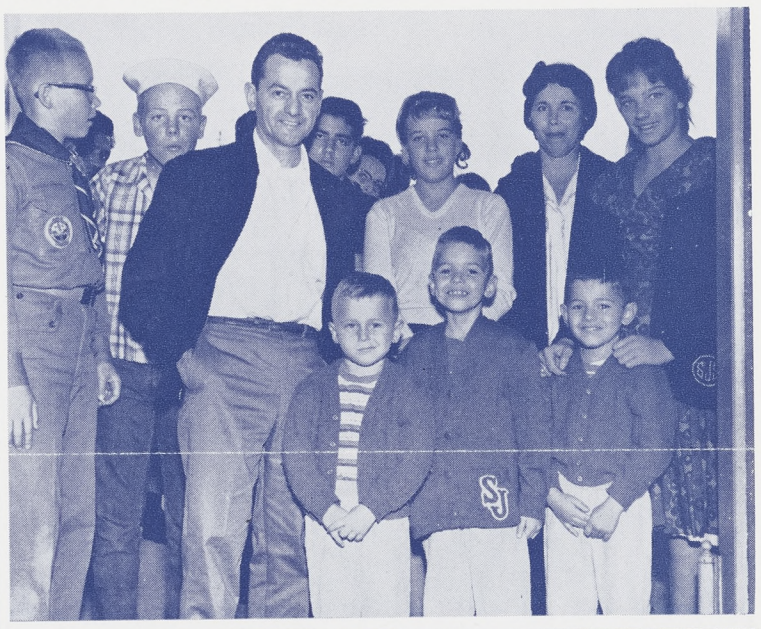
The Skindiving Club also announces that the year's outstanding divers will be honored at a dinner to be held January 21 at the Jump 'n Jack Restaurant, Pacific Coast Highway and Crenshaw. No reservations are necessary. Time is 7:30 p.m.

Santa Claus Comes to the NRC Clubhouse

SANTA CLAUS TRAIL—Northrop Juniors converge on the NRC Clubhouse for lap-sitting interview with Santa Claus and to place order for Christmas stocking material. Party started at noon, kept going until after 4 p.m. For photo of first family in the line, see below. Ice cream and candy all through the day kept things mighty lively.

LARGEST CLAN?—Hal Parry, Engineering, brought six juniors out of his fine family of eight to the party, including newest Parry addition, baby Kimberly (in mama's arms). From left they are Doreen, Tary, Lynn, Gregory, Steve, rear, and John. Santa's Scout helpers, are Gary McClanahan, and Gary Sapp.

EARLY ARRIVALS — First in line to see Santa were the Diciollis. From left are Thomas (he works in 5757), Helen Pueters (her dad was ill), Mrs. Diciolli and Julie. Then come the little Diciollis, standing in front, Jody, Tony, and Tom. Did they get to talk to Santa Claus? They certainly did.



A. D. DYE (TRANSPORTATION) AND FAMILY—Mary Jane, Mike, Stan, Joyce and Mrs. Dye. Clubhouse was replete with colorful decorations for the occasion. Note jolly old Santa between Mike and Stan.

HELPERS — Among others, little elves from NRC Sea Scout Mariners, helped Santa a lot during the afternoon. Photo'ed in their pretty uniforms, they are from left, seated, Marilyn Waller, Sandy Snead. Standing, Joyce Waller, Donna Boyd, Susan Blalock, and Anne Armstrong.

SANTA IS A FABULOUS GENTLEMAN—Tiny Lonette Prior (her grandad is a Norcrafter) is just about overwhelmed at the bounty of Christmas. She got her order placed however, and it's pretty certain that Santa will visit the Prior household on Christmas Eve.

TOY DEPT. — Juniors are pardonably interested in Santa's toy selection this year. From left, checking the wonderous stock are Jo Dee Okada and Paige Okada (Dad is in Nortronics), Jacquelin Draper and Florence Blair. Santa's girl scout helpers are Nan McKemerick, Karen Daniel, and Gigi Grossman.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, January 18, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — RAPID CITY, PRESQUE ISLE, EL PASO

NORTHROP-NORAIR NEWS BRIEFS

ADDITIONAL BOEING JETS—Since last News Brief report, Norair has added 13 fuselage and outer wing ship sets to Boeing 707—720 subcontract bringing total up from 244 to 257.

JUNIOR ACHIEVEMENT—Corporate Vice-president and Norair General Manager Dick Nolan has been named to the board of directors of Junior Achievement, Southwest District. Also, Charles Eyres, assistant to the vice-president, Engineering and president, Northrop Management Club, has accepted the assignment of team captain for Junior Achievement's industrial support campaign of the next few months.

PARIS AIR SHOW—Northrop Corporation will exhibit at the Paris Air Show, to be held at Le Bourget Air Field, 26 May through 4 June. Norair participation headed by Corporate Vice-president and Division General Manager Dick Nolan in attendance, will consist of (1) the T-38 Talon with flight film; (2) Laminar Flow Control demonstrated by technamation wherein lights and special setting effects show the process at work; (3) Bioastronautics' biomed regenerative ecological cycles for space voyages; (4) four space exhibits consisting of Zero-G demonstrations, artificial gravity, PROFAC,

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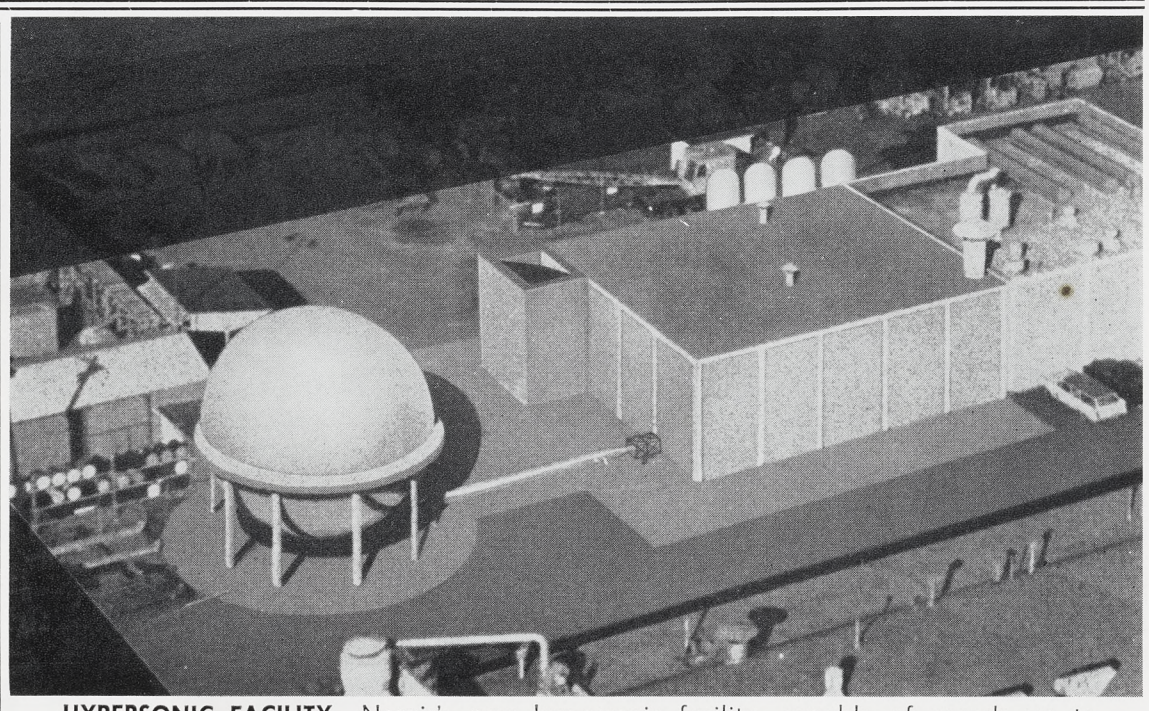


HYPERSONIC FACILITY—Norair's new hypersonic facility, capable of speeds up to Mach 14, was announced this week by Northrop Corporation President Thomas V. Jones. Facility will be in multimillion dollar class. Photo, artists conception, shows where it will adjoin wind tunnel complex. See story.

Snark Longest Range Weapon To "Graduate" States A-F

CAPE CANAVERAL — The world's first intercontinental missile is the longest-range weapon to ever "graduate" from Cape Canaveral, launch site of the Air Force Missile Test Center, it has been recently announced by the AFMTC Office of Information.

The Air Force announcement states:

The U. S. Air Force Norair Snark, has completed a final series of launchings from the Cape with the double objectives of development testing and crew proficiency. No research or "confidence" firings are to be conducted from the missile's operational site at Presque Isle AFB, Maine.

The last Snark launch at the range—programmed for a 5000-mile trip to the vicinity of Ascension Island in the South Atlantic Ocean—was carried out by a Strategic Air Command crew of the 702nd Strategic Missile Wing, Presque Isle AFB. Technical assistance was provided by the Norair Division of the Northrop Corporation, prime contractor for the missile.

Lt. Col. R. D. McKee, chief of the SM-62 section of the Wright Air Development Division's Patrick Field Test Office, pointed out that Snark was declared operational on September 1, 1959. "However, research and development was continued, in

(Continued on Page 3)

TO BMC—Lt. Colonel Walter F. Stebens, jr., Northrop deputy AFPR, right, receives best wishes on new assignment to Ballistic Missile Center, Inglewood, from Colonel Harold T. Morris, Northrop AFPR. Colonel Stebens, a 20-year Air Force man, has been on Northrop station for three years, will join BMC's Space and Satellite Directorate, specializing in logistics integration. Prior to duty at Northrop, he served at Headquarters, Air Materiel Force, European Area. Promotion from major to lieutenant colonel was made last October.

JONES ANNOUNCES PLANS FOR NORAIR HYPERSONIC FACILITY

A new multimillion dollar Northrop-Norair facility, now in final design stages, will push back the frontiers of hypersonic and space knowledge into the very environment of interplanetary speeds, it has been announced by Northrop Corporation President Thomas V. Jones.

Two other new facilities, Radioplane and Acme Metal Molding Company, were also announced by Mr. Jones. See stories adjoining.

An exotic wind tunnel capable of Mach 14—10,640 miles an hour at sea level—this unique addition to Norair science and engineering capability will do research and development in the field of hypersonic aerodynamics and missile technology. It will also be used to test space age materials and structures under the fantastic conditions to be met in voyages to the moon and Mars.

It will fill in the knowledge gap on how ultra-velocity aircraft and missile systems will perform.

Its configuration research will bridge know-how between the Mach 3 aircraft on the boards today through upcoming concepts for ships with speeds of Mach 5, Mach

(Continued on Page 2)

Acme Building World's First Aluminum Office Building

The world's first major all-aluminum office structure will be constructed in Los Angeles for Acme Metal Molding Company

Designed by Craig Ellwood Associates with consulting architect Norm Rosen and consulting engineers Mackintosh and Mackintosh, the 6800 square foot building will feature numerous innovations in the use of aluminum shapes and extrusions.

This preliminary design portrays the use of extruded aluminum columns with aluminum trusses on a 30-foot structural module. Aluminum beams span truss to truss, and high strength extruded aluminum panels span beam to beam. It is proposed to

(Continued on Page 3)

Initial Talon Cadre Finish Ground School

The first cadre of 18 hand-picked U. S. Air Force technicians who will instruct ground personnel in the mechanical support and operation of the new USAF - Northrop T-38A Talon supersonic trainer has completed training at Norair Division.

Following a six - month familiarization course on the T-38 Talon at Edwards, the group went through an exhaustive instructor checkout course at Hawthorne.

The checkout course involved the use of Norair-designed mobile training units which duplicate the Talon's 16 primary systems.

The instructor team is part of the Air Training Command's 3321st Field Training Squadron from Amarillo Air Force Base, Texas. The team and the first set of 23 Northrop - produced mobile training devices will be headquartered at Randolph AFB, Texas, where the first Talons will be delivered this spring.

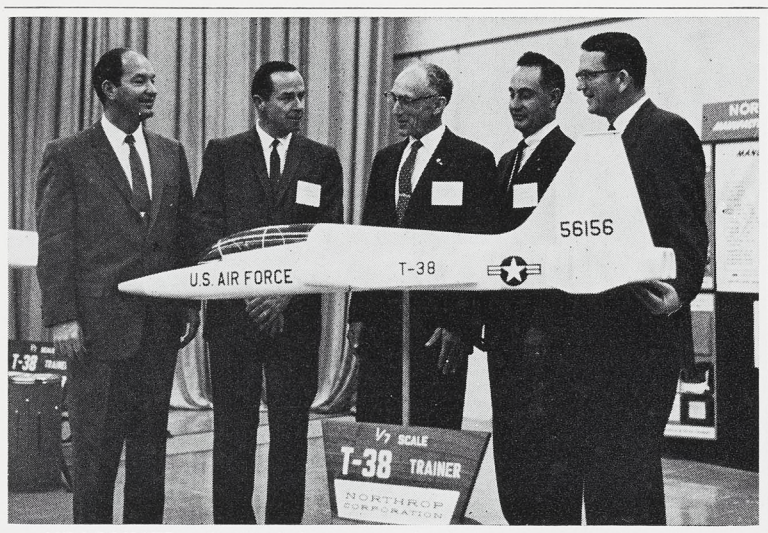
Radioplane to Build New Home in Conejo Valley

The architectural firm of Albert C. Martin and Associates of Los Angeles has been selected by Northrop Corporation to design complete new facilities for the Company's Radioplane Division to be erected on a recently-acquired 50-acre site in Conejo Valley.

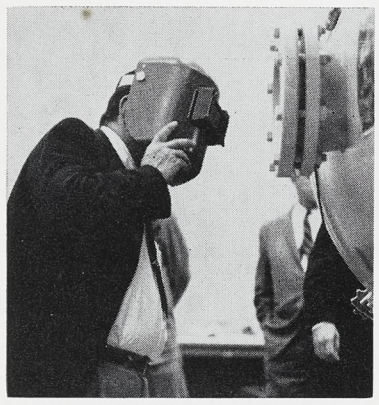
Current plans call for site preparation to start in the early part of 1961 and construction to begin in about nine months, according to M. W. Tuttle, Corporate vice-president and general manager of Radioplane. The move into the new facilities is scheduled to be completed in approximately 18 to 20 months.

Albert C. Martin and Associates is nationally recognized for its trend-setting techniques in advanced architectural engineering in the design of research and development centers for Space Technology Laboratories, Thompson - Ramo - Wooldridge, Collins Radio and other firms focused on space age technologies.

The Radioplane facilities will be located in campus-like surroundings at Rancho Conejo, part of a 10,000 acre planned development of the Janss Corporation. The new facilities will be adjacent to a new airport and will provide the most modern of accommodations of Radioplane's research, engineering and manufacturing activities.

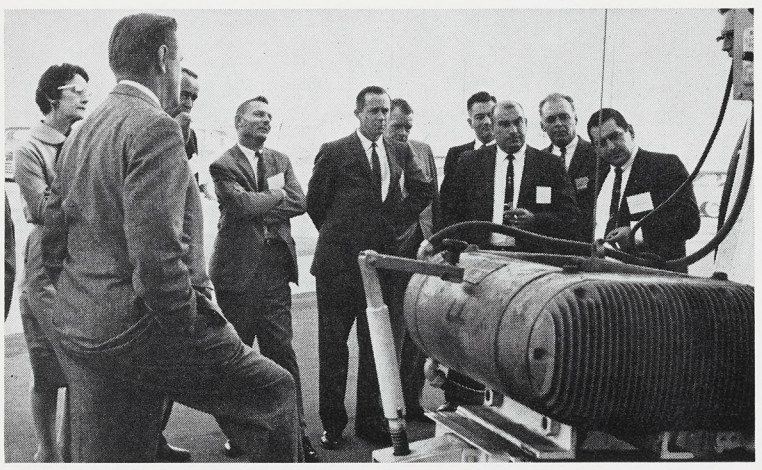


HEADLINER—T-38 Talon rates high interest on City Government Day. From left, Dr. Ballhaus, Councilman Creal, Mayor Reeves, Councilman Martin, and Mr. Nolan.



SPACE POWER — Building Superintendent George Silveira observes fury of plasma heat demonstration.

LUNCHEON—Mayor Reeves listens as Mr. Nolan gives insight on Company projects and programs.



WEIGHTLESS CONDITION—City officials on tour hear about Zero G tower studies. From left, Duane Olmore, staff assistant for laboratory operations; Mrs. O'Rourke, Police Chief Severns, City Clerk Keel, Councilman Creal, Charles Bradford, editor, Northrop-Norair News, Don Roberge, Corporate Public Relations, Fire Chief Hartzell, Harry Clark, manager, Personnel Activities, Nortronics, ES&E; and Building Superintendent Silveira.

PRODUCTION — Factory Manager Arch Wallen leads the way during tour of T-38 and Boeing assembly lines. At right, Fire Chief Hartzell. Guests stayed major portion of the day.

SPACE QUESTION — Mrs. O'Rourke, city treasurer, discusses exotic aerospace hardware in the Products Display Building with Norair's John B. Clark, director, Industrial Relations.

Hawthorne City Government Day at Norair and Nortronics Divisions

NORAIR-NORTRONICS STAGE HAWTHORNE CITY GOVERNMENT DAY—City officials headed by Mayor Robert P. Reeves were Company guests for latest in aerospace briefings, plant tour and luncheon. From left in Products Display Building after welcoming ceremonies are Dick Nolan, Corporate vice-president and Norair general manager; Civic officials Robert Hartzell, fire chief; Burt Keel, city attorney; Raymond Creal, city councilman; Mrs. Lou O'Rourke, city treasurer; Honorable Robert P. Reeves, mayor; Donald Martin, city councilman; Harry Severns, police chief; George Silveira, building superintendent; Kenneth L. Keel, city clerk; and Dr. William F. Ballhaus, Corporate vice-president and Nortronics general manager.

Hypersonic Facility in Design

(Continued from Page 1)

10, and Mach 15.

It will tell how guidance rockets will behave especially when directed against the airstream during reentry.

Reentry itself will be studied closely and accurately for the facility will provide up to 3200 degrees F. and 3000 pounds a square inch pressure for as long as 30 seconds.

The new facility will be called the hypersonic facility. It will adjoin the Inlet and Duct facility in the wind tunnel area.

In commenting, Corporate Vice-president and Norair General Manager Dick Nolan stated, "Our new hypersonic facility will be one of the finest of its kind in the aerospace industry. A part of the overall Northrop Corporation plan of facilities growth commensurate with space advances, the hypersonic facility will be a valuable tool in support of our scientific efforts and the project developments in Engineering's Technical section. It will also be used in support of Advanced Systems work. It will enable us to back up our proposals for air and space craft, missiles and satellite systems with substantiated aerodynamic and astrodynamic proof of behavior."

Test section of the hypersonic tunnel will be five square feet in area permitting a program of study in detail heretofore available in only four laboratories in United States, none privately owned west of the Mississippi.

The facility is being designed by the General Applied Science Laboratories, Inc., Westbury, Long Island under the direction of Dr. Antonio Ferri. Dr. Ferri, one of the world's most renowned aerodynamicist, is also director of the Aeronautical Laboratory, and head of the Aeronautical Engineering Department, Brooklyn Polytechnic Institute.

Norair's advanced aerodynamic complex is under the cognizance of the Engineering Technical section, G. N. Mangurian, director. Facility direction is the responsibility of the Aero and Propulsion Sciences group, G. C. Grogan, chief. P. F. Jensen is general supervisor, Aero and Propulsion Sciences Laboratory.

The laboratory is composed of three branches.

Model Design, Ralph Carlstrand, supervisor; Model Test, Russ Gamage, supervisor; and Model Shop, Chuck Sexton, supervisor.

Design of the facility will take approximately four months. Construction drawing detailing, bid evaluation and contractor selection will take another two months. About a year is required for the construction and execution of the facility. It is anticipated the hypersonic wind tunnel will be operational in May, 1962.

HYPERSONIC NEED TO KNOW

Norair scientists and engineers want to know, and the hypersonic facility will help provide the answers to these vital questions.

What is the optimum configuration for a hypersonic vehicle—best lift, drag and stability, and overall performance?

How will Laminar Flow Control perform in the supersonic regime?

What materials will stand up under the heat of reentry?

What are the best methods for deceleration and recovery of space vehicles, satellites, and probes?

How to combat micrometeorite penetration?

What are the best methods for reducing heat transfer?

How will a rocket jet, used for flight control, interact with the airstream on a hypersonic vehicle; and will a rocket at hypersonic velocity give the calculated thrust or more?

Will directional rocket gas injected into the stream bend back and burn the ship?

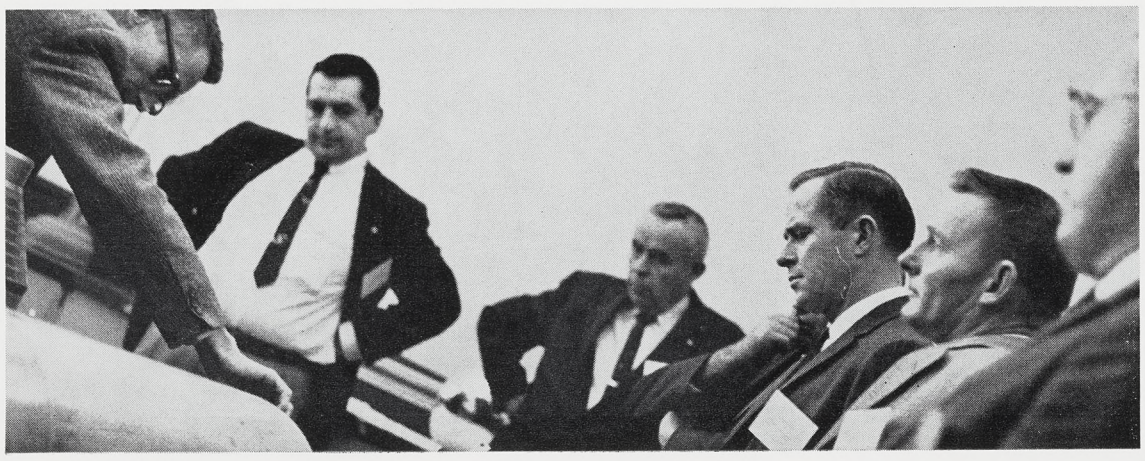
ENGINEERING $100 AWARDS FOR REFERRALS

Norair Division's referral award plan is now paying $100 for employee referrals in selected classifications, it is announced by John B. Clark, director, Industrial Relations.

Classifications currently eligible for the award are engineer, senior engineer, engineering specialist, senior technical specialist, senior research analyst, scientist, senior scientist, and research scientist.

To receive the award, the person referred must remain on the Norair payroll for 90 days.

To be eligible for an award referral cards which may be obtained at the Personnel offices, Engineering and Industrial Relations offices, are to be presented at the time of hire.



DEEP SCIENCE—Dick Lepper, senior engineer, Space Physics Laboratory, points out features of photography system used in checking behavior of space materials. Visitors from left are Building Superintendent Silveira, Police Chief Severns, Councilman Creal, and City Clerk Keel. Mr. Eyres is at right.

Northrop-Norair News

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A NORTHROP CORPORATION PUBLICATION
Published every other Wednesday
NORAIR DIVISION

CHARLES BRADFORD, Editor

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NORTHROP–NORAIR

NEWS BRIEFS

(Continued from Page 1)

and the Heliodyne; (5) capability films including the Boeing line, weapon system analysis, site activation, and missile know-how.

CAPABILITY INQUIRIES — Norair Division, through office of Lee Smith, director, Subcontracts, Marketing, has recently received requests for capability information from major manufacturers for subcontracts on current competition for an Air Force cargo and troop transport. Work would be in major assembly class with the possibility of Laminar Flow Control wings being included.

Army Orders Additional Radioplane '76 Missiles

U.S. Army Ordnance has awarded a contract to Northrop Corporation's Radioplane Division for the production of 770 RP-76 rocket-powered target missiles. The estimated definitive amount of the contract is $5,944,577. This is in addition to a total of 700 RP-76's and a broad flight service program which have been contracted for by the Army since November 1959.

The only rocket powered target missile with operational status, the RP-76 has attained the record altitude of over 75,000 feet and recently was hit by a Nike Hercules missile fired by U.S. Army Air Defense Command troops at McGregor Range, Fort Bliss, Texas, while flying at an altitude of 55,000 feet and a speed of Mach 1.15. This is the highest and the fastest target which has ever been scored on by ARADCOM troops during Annual Service Practice.

Radioplane personnel have been flying RP-76's for U.S ARADCOM troops practice firing Nike Ajax and Hercules missiles at McGregor Range since August 1959. Under terms of the extended flight program contract, Radioplane continues to be responsible for target air launch, flight control and tracking (from the Radioplane ground tracking station) maintenance and repair of the targets.

BUY BONDS

HUNTER SALUTES WELLS, T-38

Norcrafter T-38 Test Pilot Jack Wells will appear on KTTV's Ben Hunter Show, February 6.

The show is part of a Hunter salute to the T-38 Talon and American Modeler Magazine which features a full cover flight photo of the airplane plus article.

T-38 flight film will also be shown as part of the program.

The show is being arranged by Kevin L. Campbell, Curtis Circulation Company.

Ben Hunter show is on from 2:30 to 3:30 p.m. Channel 11.

Acme Metal

(Continued from Page 1)

use a similar beam and panel system for floor construction.

Aluminum also will be used in partitions, suspended ceilings, furnishings, accessories and artwork. New electro-chemical color coatings and finishes will also be featured.

This concept shows a screen of three-inch aluminum I-beams which project nine feet beyond major glass walls and six feet beyond end glass walls. This design will permit change of the screen from time to time to feature new architectural aluminum trends. Acme Metal Molding one of the nation's leading architectural aluminum manufacturers, will occupy the new structure as the headquarters building of the newly-acquired six and one-half acre site at 5022 Triggs Street, Los Angeles 22.

RAPID CITY—Other things than low temperatures come to Rapid City, South Dakota. Latest news event from the Titan site is presentation of 20-year pin to Dean J. Snyder, facilities engineer. At left, extending congratulations is Max Fayrweather, site manager, and at right is Gene Musk, operations chief.

JUNIOR ACHIEVEMENT—Junior Achievers' Cal-Nov-Co Company, sponsored by Norair, receives award of the month for good products and good management. Standing, from left, during ceremonies, Tom Brazil and John Holman, JA advisors; Mannie Wise, JA center manager; Judy Riley, Westchester Hi, president, Cal-Nov-Co; Charles Boyle, JA coordinator; Mose DeMasters, JA Personnel and Safety; Jack Miller, JA sales. Seated, from left, Cal-Nov-Co "personnel" Shirley Miller, Judy Karren, Dave Marshak, Betty Weight, Byran Thompson, Jim Elder, Haig Manjikian, Donna Tidmarsh, Judy Cepek, and Mike England. See News Briefs for more JA activity.

Snark

(Continued from Page 1)

order to further refine and develop the weapon, while combat crews were simultaneously becoming proficient in the use of the missile.

Snark launchings were conducted from the Cape as early as August 29, 1952, although the first firings were merely "dynamic dummies" intended to check out the launching procedure. Scale model firings began in November of that year, and the first full-size Snark was launched on August 6, 1953.

The first all-Air Force crew launch was conducted on October 1, 1957, by the AFMTC's 6555th Guided Missile Squadron.

The Snark program has made a number of significant contributions to the overall U. S. missile and space "state of the art." Among the "bonus" benefits of the program are the following:

1. Snark employs the first 24-hour stellar-supervised inertial guidance system. The great accuracy of the Snark is provided by its star-tracking system, which constantly supervises the missile's inertial guidance system.

2. Problems of high-frequency acoustics that occur during blast-off were first solved with the Snark. These solutions, involving the development of design criteria, have contributed to producing electronic components for ballistic missile and space programs.

3. Special equipment developed for the Air Force by Northrop to overcome problems of electromagnetic noise interference is now being used in other missile programs.

4. Development of automatic checkout equipment contributing to the rapid reaction time of the Snark has been applied to the Navy's Polaris fleet ballistic missile program and to other specialized uses by the Air Force. Army, and Navy.

5. "Zero" launch techniques developed for the Snark have proved useful in launch stability control of other large weapons.

6. Activation of the first operational intercontinental missile site at Presque Isle AFB for the Snark provided valuable know-how of substantial assistance to other missile programs.

7. The first successful airborne digital computer, developed for the Snark, has been directly beneficial to applications of airborne digital computers to other weapon systems.

8. The Snark was the first missile to use the extended Atlantic Missile Range and was instrumental in pioneering use of the range for other intercontinental missiles — the Air Force's Atlas, Titan and Minuteman.

9. Training manuals, procedures, and job specialties developed for the Snark program have helped the development of corresponding manuals, procedures, and specialties for other weapon systems. Fourteen Air Force specialties developed for the Snark are also applicable to the Atlas and Titan programs.

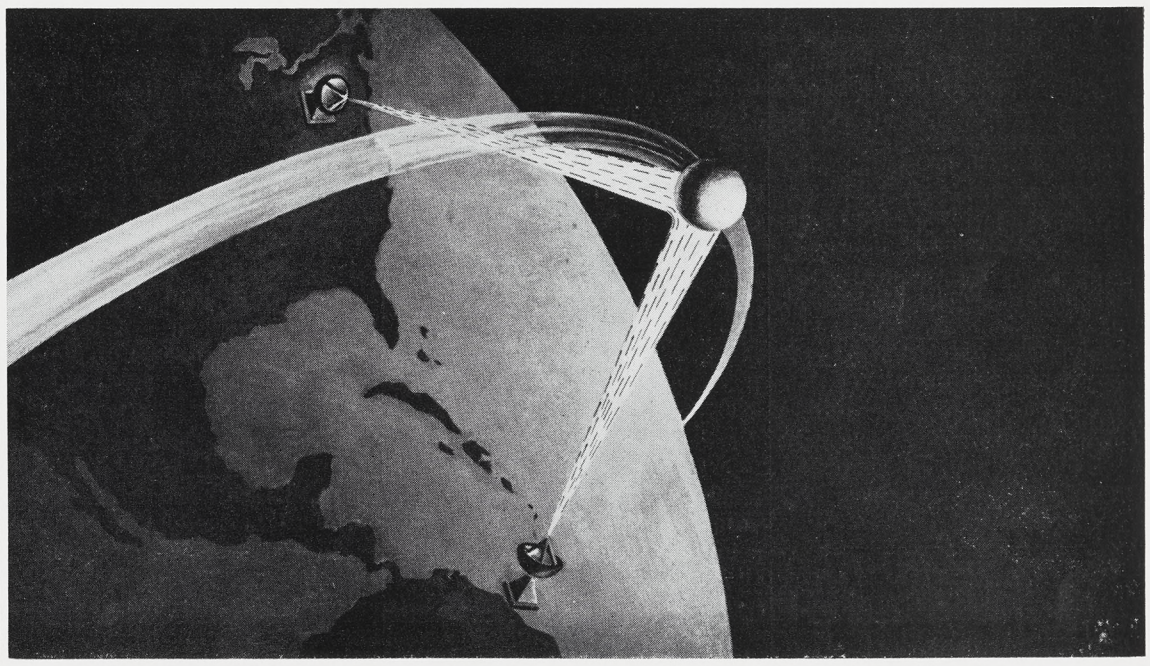
NRC SCOUT FOLK TO HOLD BRIDGE, HOMECOMING

Bridge of Honor ceremonies and homecoming reunion will be held for the NRC Mariners ship "Seamaid," and the Sea Scout ship "Sea Gull," January 28, it has been announced by Ester Cook and George Larson, skippers respectively.

The time of the ceremonies, which will be held at the NRC Clubhouse, is 8 p.m.

Highlight will be visits from Mariners and Sea Scouts "alumni" from the many years the ships have been sponsored by the NRC. Special program of entertainment includes dancing and refreshments with a dance caller to assure a lively and sociable evening.

Page Space Contract



COMMUNICATIONS IN ORBIT—Artist concept of the Experimental Satellite Communications Relay. The contract was recently awarded Page Communications Engineers, Inc., a Northrop Corporation subsidiary. The satellite relay will transmit messages 2000 miles through space between Floyd, New York and Trinidad, British West Indies, via a passive orbiting satellite. Page will design, engineer, install, and test operate the relay for the U.S. Air Force.

RIDES WANTED

7:30 a.m. — 4:15 p.m.

ALONDRA & BELLFLOWER, Bellflower. Betty J. Brown, ext. 1222. 3

COMPTON BLVD. & VERMONT AVE., Gardena. Irene Montesano, ext. 1222, DA 9-8468. 3

8 a.m. — 4:45 p.m.

SEPULVEDA & MANCHESTER BLVD., Los Angeles. Larissa Domnikov, ext. 1815, OR 0-0886. 5

WESTERN & 160th ST., Gardena. Judith K. Starnes, ext. 1678. 5

ARDATH & 141st ST., Gardena. Larry Cooperman, ext. 1553, DA 3-7398. 5

PROSPECT & PACIFIC COAST HWY., Redondo Beach. Eleanor A. Markert, ext. 1372. FR 5-1791. 5

4:45 p.m. — 1:15 a.m.

REDONDO BEACH BLVD. & PIER AVE., Redondo Beach. Marie Prulitsky, ext. 1471, FR 6-3549. 8

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday. one week before publication.

FOR SALE

BOAT, ski & drag-type, Corvette powered, w/new battery & trailer, $1995. FR 8-3990. A

AUTO, Ford, 1956, conv., white w/black top, red & white upholstery, 500 mi. on overhauled motor, $595.; slide projector, 35-mm, Argus, $10. PL 6-8095. A

PICKUP TRUCK, 1934, Ford, $100. OS 9-2433. A

SAILBOAT, 16', complete set of sails, sleeps 2, $500. Box 401. A

PING PONG TABLE, cost $25.; $15. PL 5-4497. A

BOOKS, 54-vol. set, Great Books of the Western World, $290. HO 4-6094. A

PUPS, Beagle, males, AKC registered, $35 each. DA 3-6894. A

REAL ESTATE, 2½ acres, Joshua Tree, Cal., $325 acre. OR 2-9008. A

TRAILER AXLE, springs, hubs, wheels, tires, $35; baby stroller, Foldarola, $5. FR 9-1397. A

AUTO PARTS, Herbert cam for Chevrolet or Chrysler, $180; Cad. trans. Hyd. $30; rebl't Hydro, $60; tires, 5, 9:50x14, $6 each. FR 1-2531. A

AUTO, 1951 Chrysler Imperial, power brakes, power windows, w/w, dual exhaust system, $300. DA 7-9960. A

BABY EQUIPMENT, chest, Lullabye, blonde, 5-drawer, cost $75, $40; crib, Kantwet posturized mattress w/zippered plastic cover, cost $75.; $40. TE 3-9430. A

MATTRESS, 80" double bed-size, $30.; freezer, 20 cu. ft., $40. EX 7-0431. A

RANGE, O' Keefe & Merritt Deluxe, w/ grillavator, griddle, clock-controlled oven, $70. TH 6-5589. A

BICYCLE, Schwinn, 26" w/trailer, $20.; short wave radio, Knight, 4-band, $35. FR 1-5365. A

BICYCLES, rebuilt, sizes 20"-26", boy's & girl's, $20-$50.; 2 speedometers for 26", $5 ea.; wheel, 26", lt. wt., chrome rim, $5.80; rear wheel, 26", lt. wt. chrome rim, $8.80. OS 6-3365. A

AUTO, Dodge, 1946, 4-dr., $50.; refrigerator, Crosley Shelvador, $25. PL 4-0105. A

PUPS, 7-wks.-old, mixed breed, $2.50. FR 4-9997. A

BUNK BEDS, pr., mattress & springs, $25.; hydroplane boat, 4'x8'. OS 6-3448. A

CAMERA, Praticka, 35mm, 50mm, 2.8 lens, German-made, auto. rangefinder, double-exposure knob for trick photography, lite meter, 600/sec. shutter speed, $39. Box 402. A

FOR SALE OR TRADE

FALCON STATION WAGON, 1960, 2-dr., deluxe white, r/h, take over payments, w/w, cost $2700; $1700. & trans. car. OS 9-4804. M

RACE BOAT, hydroplane, class A or B, w/car top carrier, beginner's motor, 7½ h.p. Evinrude silent twin, reverse gear, cost $700.; $275. or trade for good Model A. FR 7-2933. M

WANTED TO BUY

DEER HEAD, mounted. FR 5-2255. B

REFRIGERATOR, kitchenette size, electric. EX 7-0431. B

Bloodbank At Norair February 1

Next visit of the Red Cross bloodmobile to Norair is scheduled for Wednesday, February 1. it has been announced by Charles Boyle, supervisor, Personnel Activities.

The bloodmobile will be stationed at the NRC Clubhouse from 7:45 to 11:45 a.m.

Donor application forms are available from organization clerks and at Personnel Activities offices Plants One, Two, and Three.

All Norcrafters and their immediate families, whether donors or not, are eligible in time of need to draw from the blood bank.

The November bloodbank set a record for the year with 198 pints deposited to the account.

TOASTMASTERS ANNOUNCE 1961 CLUB PROGRAM

Jack Apodaca, Toastmasters 212, announces that first on the agenda for 1961 is a speechcraft program, including compilation and organization of speech material, proper language usage, and effective delivery.

Concurrent with the speechcraft program, will be instructions in vocabulary building and aids in letter writing.

Dinner meetings are held weekly, every Thursday, 6:30 p.m., Cockatoo Inn, Imperial at Hawthorne Boulevard.

TENNIS WINNERS ANNOUNCED

The NRC's second annual intracompany elimination-consolation tennis tournament winners:

Championship singles, first place Everett Jefferies; second place, Jim Miller. Consolation singles, first place, Steve Hobson; second place, Russ Black. Championship doubles, first place, Chet Druliner and Rod Sackett. Consolation doubles, first place, Ed Combs and Del Harter.

That famous Norcrafter Bill Lurie, one of the nation's top tournament men, is serving as NRC tennis instructor. He will be on the El Camino Courts on Saturdays, January 21 and 28 at 10 a.m.

Bill's instruction is free of charge. See photo above.

FREE (to be given away)

KITTENS, 2, 4-mo.-old, male & female. FR 7-2263. D

VENETIAN BLINDS, 3, PL 7-2753. D

RENTALS OFFERED

APT., 2-bdrm., 1 bath & 3-bdrm., 2 bath, unfurn., 4 short blocks to Northrop, lge. rms., lge. closets, carport, $95 & $125 mo. OS 6-1574. E

APT., 1-bdrm., unfurn., redecorated w/ garage, 2 miles from Northrop, $75. OR 8-9406. E

APTS., furn., 1-bdrm., $85.; 1 bachelor, $60. PL 8-6890. E

HOUSE, 3-bdrm., 2 bath, in Torrance, wall-to-wall carpeting & built-ins, $150. mo. OS 5-2294. E

CHILD CARE WANTED

CHILD CARE WANTED,2 children, 7:30 a.m.-5:00 p.m. FA 8-8308. H

PERSONALS

ORGAN INSTRUCTION, rhythm, harmony, chords & modern styling, for beginners & advanced students. OS 5-2556. L

SINCERE APPRECIATION for the thoughtfulness shown by my many friends at Northrop following my recent accident and recuperation. REBA I. TURNER. L

WE WISH TO extend sincere thanks and appreciation for expressions of sympathy during the loss of our loving husband & father. MRS. MARTHA E. ROST & FAMILY. L

LA JOLLA CHAMPIONSHIP—Famous television personalities, Dinah Shore and her husband, George Montgomery, were on hand when Norcrafter Bill Lurie won 12th annual senior hardcourt tennis championship. Bill is at right and another Bill, Bill Smith, who lost in the semifinals, is at left. To win the title, our Bill downed third-ranked Chauncey Steele of Cambridge, Mass., 6-4, 3-6, 6-2. Note beautiful smile from beautiful Miss Shore. Bill is NRC tennis instructor.

NRC Golfers To Tourney At Gilman's

Coming up for NRC golfers one month hence will be a tournament at Gilman Hot Springs, it is announced by Bill Putnam, commissioner.

Tee off time will be 8:30 a.m Date, February 18.

Entry and trip information is obtainable at Personnel Activities.

Results of the NRC Christmas golf tournament held at Fox Hills and Baldwin Hills:

Low gross, Mike Turney and Lou Engbarth who both shot 152. Mike was awarded 21 golf balls, Lou took home nine golf balls and a trophy. Low net was won by Dick Outcault who shot 153-22-131. He was awarded nine golf balls and trophy.

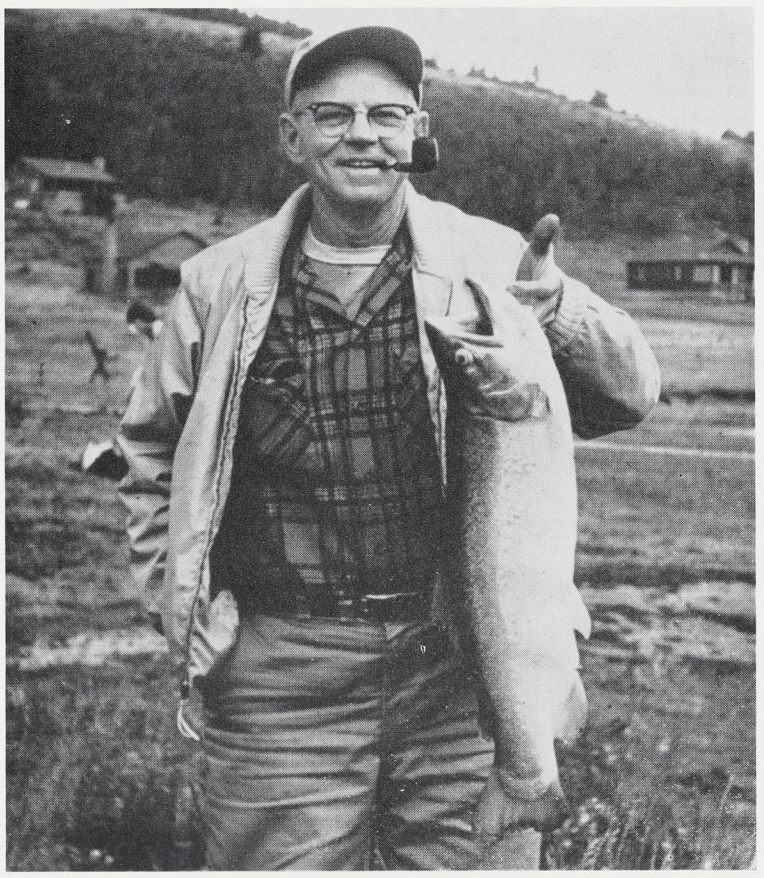
Putting was won by Don Riddle; three golf balls and trophy.

First flight, Ted Deguisne. 154-14-140; 12 golf balls.

Second flight, a tie, Mike Craig and Ralph Goodall, 165-28-137; six golf balls each and a trophy each.

Third flight, Maury Thews 178-42-136; seven golf balls and a trophy.

Fourth flight, another tie. John McNamara and Jim Cashman, 207-60-147. Each man was awarded six golf balls and a trophy.



A GRANDADDY RAINBOW—Norcrafter Spence Borger, Metal Fitting and Welding Shop, snagged this he-man trout at Henry's Lake, Idaho, during a recent vacation. The big boy was 27½ inches long, 16½ inches around the waist, and weighed 9 pounds 8 ounces.

NRC Good Time Table for January

For enrollment or information on activities listed below, call or contact Personnel Activities, Plant One, extension 2784. All clubs meet at the NRC Clubhouse unless otherwise noted.

ART CLUB, Dave Miller
Meet in Annex Thursdays, 7 p.m.

BALLROOM DANCE CLASS
Thursdays, 8:15-10 p.m.

BASKETBALL, Bill Greene
League play Tuesdays p.m. Practices, Saturdays a.m. at Leuzinger Gym.

BIBLE STUDY, C. J. McGuire
Plant I—Daily, 11:30-12:15, Tool Design Bldg., 11-11:45, 5566 Conf. Room.
Plant II—Mondays & Thursdays, 12-12:45, Conf. Room 2.
Eng. Center—Daily 12-12:45, Reliability Conf. Room.

BOAT CLUB, Sandy Friedfeld
Trip to Catalina, January 28.

BOWLING (days)
Winter leagues rolling.

BOWLING (nights)
Winter leagues rolling.

BOY SCOUTS, Sid Cohan
Sea Scouts meet Tuesdays, 7:30 p.m.
Cub Scouts meet 4th Friday, 7:30 p.m.

CAMERA CLUB (days)
Meet 1st & 3rd Wednesdays, 7:30 p.m.

CAMERA CLUB (nights), Gene Beck
Meet 1st & 3rd Saturdays, 8 p.m.

CAMPING CLUB, Fred Armstrong
Meet 1st Wednesday, 7:30 p.m.

GEM & MINERAL CLUB (days),
Meets 2nd Wednesday, 8 p.m. Special movies, January 18, 25, at 7:30 p.m. 2nd Annual Gem & Mineral Show, February 25, 10 a.m.-10 p.m. February 26, 10 a.m.-6 p.m.

GEM & MINERAL (nights), Doyle Shook
Meeting place varies.
Meet 1st Wednesday, 1 p.m.

GOLF, Bill Putnam
Fox, Baldwin Hills, Xmas tourn., see story this page.

MODEL RAILROAD, Jack Wilson
Meet in Annex, Thursdays, 7-10 p.m. Visitors welcome.
Operation night, 1st Thursday of month.

RADIO CLUB, Paul Serafin
Meet last Thursday, 7:30 p.m. Radio code class meets Tuesdays and Wednesdays, 7:30 p.m. NRC's station is W6VPZ.

SKEET CLUB, Bob Bagby
Shoots alternating Sundays, Jan. 28, at Rancho Angelus Range, Main & Broadway, 10 a.m.

SKI CLUB, Bernie Shyffer
Meets 2nd Wednesday, 7:30 p.m. Mammoth Mt. Trip, January 28-29.

SKINDIVING, Ralph Gonzales
Meet 3rd Tuesday, 7:30 p.m. Awards Dinner, 7:30 p.m. at Jump'N Jack Restaurant on Pacific Coast Hwy.

SPORTS CAR CLUB, Bill Perry
Meet 2nd Thursday, 7:30 p.m.

SQUARE DANCING, Dick Rinehart
Henry Clay Jr. Hi, 124th & Western, Fridays, 8-11 p.m.

SURF FISHING, John Pawlicki
Meets 1st Tuesday, 7:30 p.m.

TENNIS, John Potts
Free instruction Saturday, January 21, 28, 10 a.m., at El Camino Jr. College. Practices every Saturday, Indus. League play alternate Sundays.

TOASTMASTERS 212 (days), Jack Apodaca
Meet at Cockatoo Inn Thursdays, 6:30 p.m.

TOASTMASTERS 1398 (nights), Jay Rayner
Meet at Western Ave. Country Club Thursdays, 12:15 p.m.

TRAVEL CLUB, Howard Cornelius

FOR THE LADIES

BOWLING (nights), Gloria Bagley
Winter leagues rolling.

BOWLING (days), Corinne Davis
Winter leagues rolling.

GIRL SCOUTS
Mariners, Tuesday, 7 p.m., Naval Reserve Center, 201 W. 126th St., Hawthorne, ages 13-18. All Norcrafter girls welcome.

KNITTING, Ethel Simpson
Meets Thursday, 7:30 p.m. Free instructions each meeting.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, February 1, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — RAPID CITY, PRESQUE ISLE, EL PASO

NORTHROP-NORAIR

NEWS BRIEFS

THE 7090—Integration of the IBM 7090 computing system at Norair Division is proceeding according to plan. Both Engineering data and Manufacturing's Automated Operations Control material are now being processed through the new system. Finance data is being readied for the 7090 on schedule. . . . Only one computing day was lost during the 7090-704 changeover. . . . Data Processing is now formulating for distribution to key computing personnel a compendium of computing and data processing vocabulary. . . . The 704 system is scheduled for return to IBM this month.

CATEGORY II—The all-USAF 1200-hour Category II flight test program at Air Force Flight Test Center, Edwards Air Force Base, is expected to end this week—approximately a month ahead of schedule. "Cat Two" passed 1000 flying hours on 9 January, 175 hours ahead of the timetable.

AIR FORCE TEAM ON LFC—Top level Air Force team visited Norair last week for LFC consultations and progress review in preparation for final USAF approval of airplane configuration. Team was headed by Lt. Colonel Walter D. Bennett, chief, LFC Project Office, WADD. Key men in attendance were Hans Peot, civilian deputy to Colonel Bennett; Major Edward Schenker, LFC chief engineer in the directorate of Systems Engineering, WADD; Captain James Schieb, AMC's Laminar Flow Control Project Officer; and Scientist Phil Antonatos of WADD's directorate of Advanced Systems Technology. Mr. Antonatos is a pioneer on the project, having followed Norair's LFC research for quite a number of years. Team consisted of 14 persons in LFC management and technical categories. Stated Mr. Kuska, manager, Laminar Flow Control

(Continued on Page 3)

Radioisotope Series Held At El Camino

Outstanding scientists from the United States Atomic Energy Commission and nuclear industries met with local industry leaders in the Southern California Industrial Radioisotopes Conference, Jan. 25, 26 and 27 at El Camino College.

Purpose of the meeting was to stimulate greater interest in, and knowledge of, the uses of radioisotopes in manufacturing, education and research.

Northrop Corporation, Western Gear Corporation, the Los Angeles Chamber of Commerce, UCLA Engineering Extension and El Camino College sponsored the event.

The opening day's agenda served to discuss such topics as "An Introduction to Radioisotopes," "History and Fundamentals," "Public Relations Aspects," "Radiography," and "Radioisotopes Gauging Techniques."

Headlining the second day schedule were talks on training for radioisotope use, regulations and licensing, management aspects, industrial applications, and the State's role in radiation.

Case histories by local firms actually using radioisotopes in their operations and a tour of UCLA nuclear facilities—reactor and cyclotron—will conclude activities of the conference.

Northrop was represented at the meetings by Dr. Ludwig Roth, director of Research, Norair Division; Ward B. Dennis, director of Corporate Development Planning, and Robert H. Johnson, senior radiochemist, Norair Division Nuclear Sciences.

MARVIN MILES

DON DWIGGINS

NIESON HIMMEL

Southland Newsmen Try Scorpion Wings in Flight at Edwards AFB

Three top Southland aerospace newsmen were flown in the T-38 Talon last week and became the first newspaper writers to measure the feel of Norair's new supersonic Air Force trainer.

Flights were from Edwards AFB.

Marvin Miles, Los Angeles Times; Don Dwiggins, Mirror-News; and Nieson Himmel, Herald-Express were the newsmen. Air Force Pilots were Captain Swart Nelson for Marvin Miles; Captain Jay Hanks for Don Dwiggins; and Captain James A. McDivitt for Nieson Himmel.

The project was conducted by the Air Force with Northrop Public Relations providing support.

Initial briefings were delivered by Lee Begin, Norair Engineering. Subsequent briefings were by Brigadier General John W. Carpenter, III, Air Force Flight Test Center commander, Edwards AFB; Lt. Colonel James C. Pedersen, Edwards T-38 Test director; and Lt. Colonel Arthur W. Buck, T-38 Test Force, Edwards.

The newsmen's reactions:

Himmel—"Within 1½ minutes after takeoff, we went through the sound barrier as though some giant had grabbed us like a bowling ball and hurled us—but gently."

Dwiggins — "Suddenly we were in the high sky, rolling, looping, arcing through graceful Immelmans, clover leafs, lazy 8's . . . faster than sound, and then, in slow flight, hanging on a stall, feeling the incredible dynamic stability of the sleek trainer.

"There it was—the ship I'd dreamed of.

"Firewall the throttle and you slide through the Machs, faster than your own sound, and still with an ease of control in acrobatics on which jet age cadets can sharpen skills.

"Pull the throttle back, dump gear and flaps, and mistreat the controls — the Northrop T-38's clean lines make it so forgiving. . . ."

Miles — "You don't fly the USAF's new supersonic Talon trainer. You wear it!

"As we climbed, Nellie (Captain Swart Nelson) talked of the Talon:

" 'She's smooth, real smooth —and real honest. No moods. She's designed to a 7.33 (gravity) load limit just like a fighter and her ultimate capacity is half again greater for safety.'

"Miles above the desert, he opened the throttles wide and said: 'Watch the Machmeter.' The needle moved up steadily, past the speed of sound to 1.2, about 800 mph. No single tremor indicated she had sliced through the barrier.

" 'She isn't designed for superspeed,' he explained. 'We just wanted her supersonic to get the boys through the wall . . . but watch her play!'

"He hauled the stick back and we swept into a two-mile loop that crunched 4.2 Gs (gravity) on me, jumping my 160 lbs. to 670 lbs. I tried to lift my finger to touch my chin. No go.

"Next he twisted her through a series of rolls—slow rolls, snap rolls, four-point rolls. Then he put his hands atop his helmet and said: 'She's all yours.'

"That was when it seemed I was wearing her, not flying her.

"Lean a little to the left, your stick hand moves and she rolls the horizon around like a baton. Lean forward a bit, push the stick slightly and your plexiglass bubble heads for the deck and the uprushing sagebrush. Now lean back. The stick comes back and she flashes upward, moving the sun across the sky and pulling the desert over your head.

"If you can call an airplane a doll—she's a doll!"

Facilities In Color
See Pictorial Insert

Dr. Benedikt Theorizes on Relativity

An astronaut might be able to leave earth, journey into space and return older than his twin he left behind, a Norair scientist stated in Dallas, Texas, in a startling new twist to the famous "clock paradox" in Einstein's Theory of Relativity.

This is contrary to popular belief about the subject, but is a natural consequence of Einstein's theory, said Dr. Elliot T. Benedikt, head of Norair's Space Physics Laboratory.

Dr. Benedikt was among space experts from all parts of the nation presenting papers at the annual meeting of the American Astronautical Society in Dallas.

Dr. Benedikt explained that the most widely held belief about travel at or near the speed of light is that the traveler's clock would slow down and he would return to earth younger than his stay-at-home contemporaries.

(Continued on Page 3)

Colonel Jack Marinelli

ORDER OF THE TALON—Corporate Vice-president and Norair General Manager Dick Nolan, left, presented Colonel Jack Marinelli, president, Army Aviation Board, with Order of the Talon scroll and lapel pin. Occasion marked Colonel's recent flight in the T-38 from Edwards, and N-156F from Palmdale.

Atom Packin' Scorpion on Guard

THE ATOM BOMB COMES TO PORTLAND—But in the role of defense. For the first time, the City of Roses is being defended by the nuclear Genie which is being packed by none other than the famous Northrop-Norair Scorpion twin-engine jet all-weather fighter produced at Hawthorne and Palmdale during the '50's. Airplane is F-89J, newest fighter-interceptor assigned to the 123rd Squadron of Oregon Air National Guard. Guardsmen are shown preparing a dummy bomb for Scorpion loading and practice mission to follow. Lt. Colonel Patrick E. O'Grady is 123rd C.O. For story of first fighter airplane nuclear bomb firing, see Norair News feature "Fury in the Sky", July 31, 1957. Genie can kill at near-miss range of half a mile.

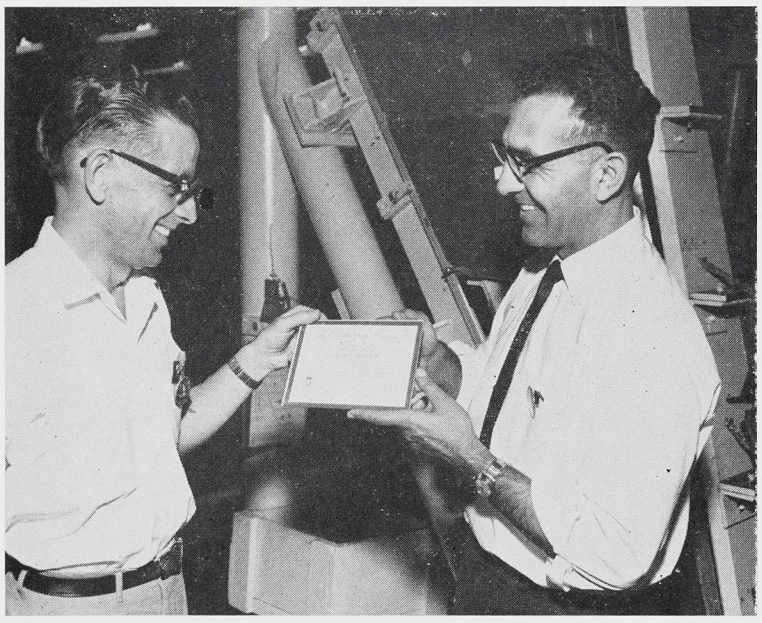
Radioplane's Q-4B Goes Supersonic at Holloman

The second supersonic flight of a Radioplane Q-4B target drone was accomplished at Holloman Air Force Base during a flight evaluation program currently being conducted by the U.S. Air Force.

Air launched from a GC-130A aircraft, the 35-foot long drone thundered to a maximum speed of Mach 2.0 in level flight at an altitude of 36,000 feet. After a 15-minute programmed flight during which all flight test objectives were satisfactorily demonstrated, parachute recovery was commanded and the drone descended to a pre-selected impact area.

The Q-4B is powered by a General Electric YJ85-GE-5 jet engine with afterburner. The drone was developed for the Air Force as a supersonic target for air-to-air and surface-to-air defensive weapon systems. Radar-guided and equipped with electronic devices to give the appearance of an aggressor bomber, the Q-4B may also carry special scoring equipment to register the killability of missiles fired against it, even though the target does not suffer a direct hit. When the drone is not destroyed in flight it is recovered by parachute.

Joins Wise Owl Club



WISE OWL—Willard Geiersbach, 5512, has reason to thank safety glasses. He is shown here receiving Wise Owl Membership Club certificate from 5512 Foreman George Babajian. Willard's near miss occurred during honeycomb assembly when a screwdriver slipped. Evaluation of the mishap showed that safety glasses were instrumental in saving possible serious injury to his left eye.

Buy BONDS

THANKS FROM DON BOSCO

Surplus technical magazines at Norair have been put to the best use. After serving the purposes of the space age in Engineering Library, H. W. Jones, supervisor, they are gathered by "Doc" Parker of Quality Control and turned over to Don Bosco, Technical High School, South San Gabriel, where they go to work again helping boys of the school to become craftsmen and ready for industry.

Rev. Arnold F. Buja, S.D.B., Don Bosco librarian, writes a thank you note to Mr. Parker:

". . . On behalf of the school I wish to thank you for your thoughtfulness in sending to us the technical magazines.

"You may be assured that these books will be of great benefit to our students.

"We are very grateful and deeply appreciate your kindness. . . ."

Other Norcrafters who unselfishly helped on the project are Dan O'Halloran, Quality Control, and Rita Scott of the library.

DO YOU HAVE A REFUND COMING?

Norcrafters are advised that they are entitled to claim a refund on 1960 disability insurance from the State of California if they worked for two or more employers during the year, and (1) received more than $3600 in wages during the year for work in California; (2) had deductions for disability insurance (either State or voluntary plan) taken from your wages, and (3) the total of such deductions exceeded $36.

Those eligible for refunds should request application form DE 1964 from the Central Office of the Department of Employment, 800 Capitol Avenue, Sacramento 14, or from any local office.

T-38 Draws High Praise For All-Weather Tests

TALON ALL-WEATHER CREW—Men who put the T-38 through her paces at Eglin. From left, standing, Airman First Class George W. Duncan, Logistics, AFFTC; Ernest Parkin, instrument mechanic, WADD; James V. Peto, aircraft mechanic, WADD; Harold H. Ross, digital instrument technician, WADD; Warren A. Henninger, aircraft mechanic, WADD; Albert Batdorf, crew chief, AFFTC; Donald C. Bowyer, representative, GE. Front, Frank H. Cross, Liaison, Climatic Hangar; Harold D. Clark, instrument technician, WADD; Clair K. Sandstrom, project engineer, WADD; Clifton L. Shelton, representative, Norair; William E. Stader, crew chief, WADD; Vernice L. Rolfson, instrumentation engineer, WADD. Arctic clothing was none too warm in hangar's minus 70 degrees.

Flying colors for the T-38 Talon!

Airplane AF 59-1596 has completed the Climatic Laboratory test portion of the T-38A Extreme Environmental and Adverse Weather Test program at Eglin AFB. Performance under the most severe conditions the airplane will ever be called upon to face, was "amazing," it has been stated by Air Force test personnel.

Following Eglin test completion, the airplane waited for suitable weather (rain) for delivery back to Edwards.

Next, the aircraft will be flown to Malmstrom AFB the first week in February where further cold weather testing will be carried out. The cold weather testing at Malmstrom AFB will consist of operational type missions being performed in an arctic environment. Taxiing, takeoffs and landings will be accomplished on icy and snow-covered runways. Flying missions will be flown under actual arctic conditions.

Cliff Shelton, Norair tech rep to Eglin, in the conclusion of his activity report on the Talon showing states, "All (Air Force) personnel attached to the T-38 Adverse Weather program were highly experienced in their individual responsibilities. They have made many favorable analogies of the T-38 to other "Century" aircraft on which they have been assigned . . . Mr. Clair Sandstrom, project engineer stated that the aircraft had not only completed the program satisfactorily, but, the little ship's performance under the extreme adverse weather condition was amazing. These men took personal pride in being assigned to the project."

Temperatures at Eglin went as low as 70 below, yet the T-38 continued to operate with a high degree of efficiency. Malmstrom and Montana's icy gales hold no fear for the Talon or her Air Force-Norair crew.

Before Eglin, the same Talon spent test time in Imperial Valley at El Centro. There all-weather tests started with high temperature flights. T-38 was "heat soaked" by standing in 105 degree burning sun for four hours, then flown with full design takeoff weight plus test instrumentation. Average takeoff run in the 105 degree heat was 2600 feet. Average landing roll was 3525 feet.

Following the "heat" program, the airplane was flown to Eglin by USAF Captain Russell Rogers.

At Eglin, the T-38 was sealed in the hangar for two months as temperature was gradually dropped to minus 70 degrees.

AF CALLS FOR "READY NOW" NAVIGATORS

The 8499th Navigator Training Squadron (Reserve) at March Air Force Base, Riverside, has openings for former Air Force navigators who wish to join a "Ready Now" reserve unit.

Ex-navigators of lieutenant and captain rank can now train regularly with the ready reserve, and earn reserve pay and retirement points. The 8499th is one of eleven such units throughout the U. S.

Interested and qualified persons may write or call Detachment Number 2, 2223rd Instructor Squadron, March Air Force Base, Calif.

Northrop-Norair News

VOL. 19 NO. 5

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A NORTHROP CORPORATION PUBLICATION
Published every other Wednesday
NORAIR DIVISION

CHARLES BRADFORD, Editor

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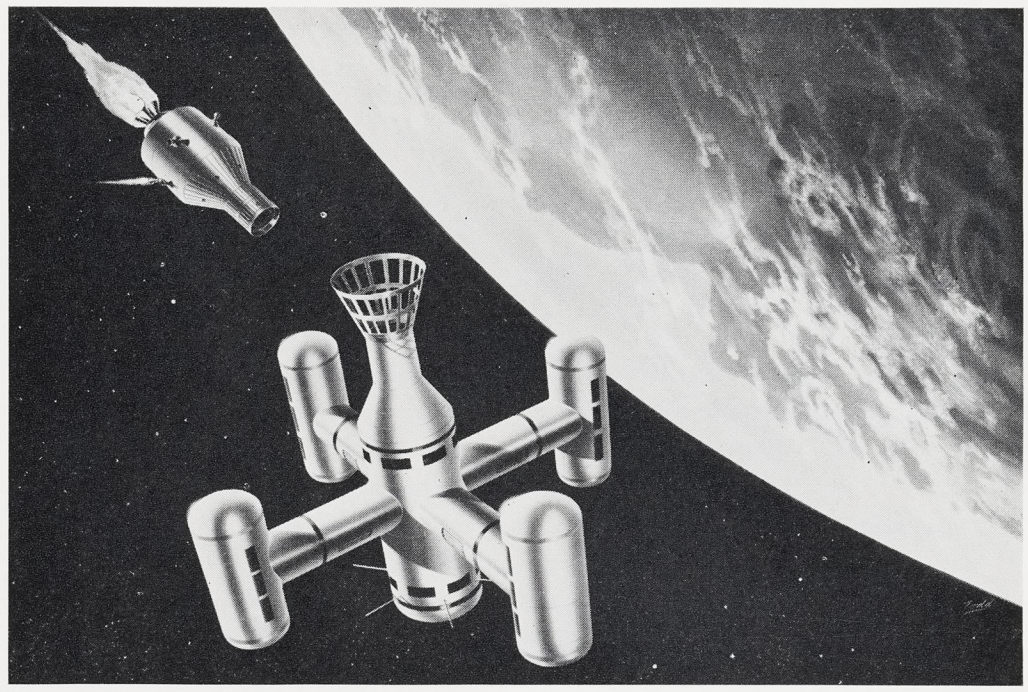
Northrop-Norair News



NORAIR DIVISION, NORTHROP CORPORATION

A SALUTE TO TEN YEARS OF PROGRESS

IN FACILITIES AND EQUIPMENT

1950 1960

***FROM THE ANNUAL REPORT, 1960, NORTHROP CORPORATION**—To exploit its advancing technology and further strengthen its competitive position, Northrop continues to improve and expand its physical facilities. A major new science and research center is under construction for the Nortronics Division . . . A new space propulsion laboratory has been completed for the Norair Division . . . At the Anaheim plant of Nortronics—an underground explosive ordnance laboratory and a new centralized engineering building in design . . . Precision Products Department in Norwood, Massachusetts, a new engineering and science center . . . Radioplane Division will be consolidated in a modern research and manufacturing center in the Conejo Valley, northwest of Los Angeles.*

Thomas V. Jones, *President and Chief Executive Officer*

NORAIR DIVISION IS A STRONG *reflection of the Corporate program of facilities improvement and expansion. During the past ten years over $22 million, an average of $2.2 million a year, has been expended in building to meet the challenge of the aerospace age.*

Acquisitions at Norair range from a $3½ million Engineering and Science Center through expenditures such as banks of radiant lamps for new space brazing methods and a Zero G tower for the deep science observation of materials in the weightless condition.

During the ten-year period, Norair Division increased floorspace by 1,000,000 square feet.

Also, as part of the program, the Division's existing facilities and equipment were modernized and completely updated.

Now, in the 1960's, the great task of building and strengthening continues apace. Newest to be added, even now in design, are the Hypersonic Facility and Acme Metal Molding's new all-aluminum office building. A highly significant equipment addition under lease arrangement is the new 7090 IBM computer with a value of approximately $3½ million. More, as yet unannounced, are to follow.

Camera and caption tell the full story.

(1) Tooling Building — Completed in 1952; 126,000 square feet of floorspace; value, $837,000.

(2) Adhesive Bonding addition —Completed in 1958; 43,500 square feet of floorspace; value, $435,000.

(3) Mezzanine addition—Completed in 1952; 26,250 square feet of floorspace; value, $144,000.

(4) Foundry Building — Completed in 1952; 7200 square feet of floorspace; value, $42,000.

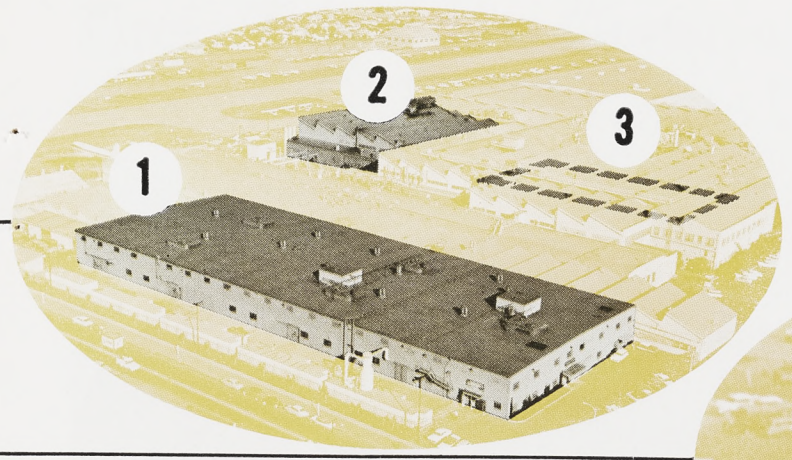
(5) Precision Tooling Building — 1957; 4800 square feet; $86,000.

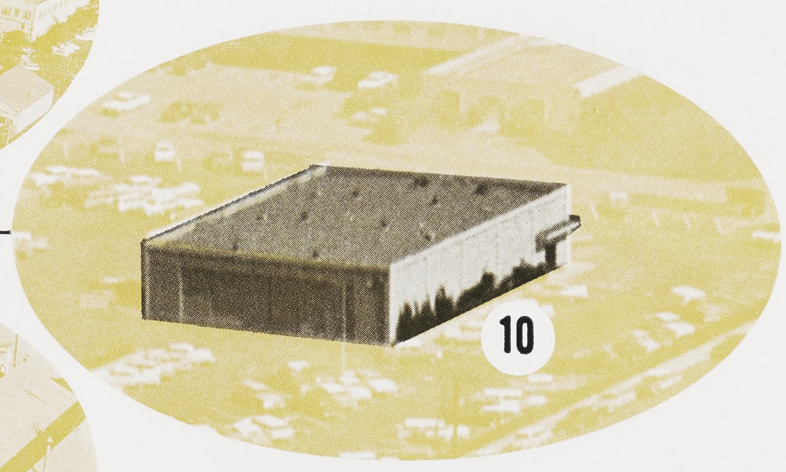
(6) New Assembly Building — 1952; 167,700 square feet; $966,000.

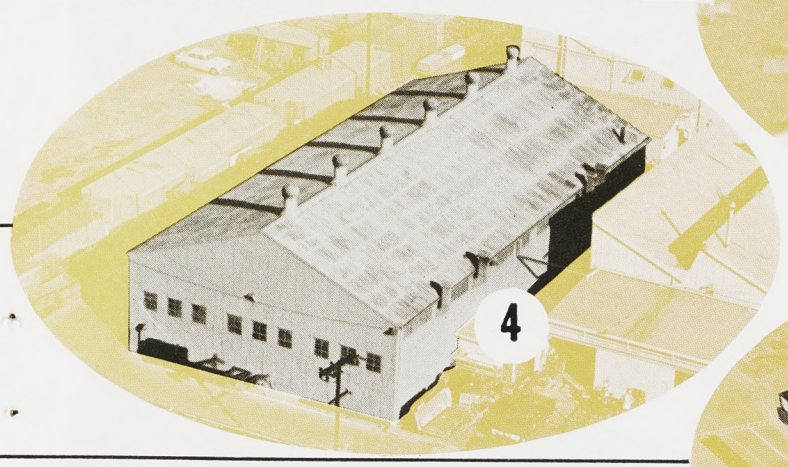
(7) Engineering Building— 1957; 246,800 square feet; six stories in height; $3,500,000.

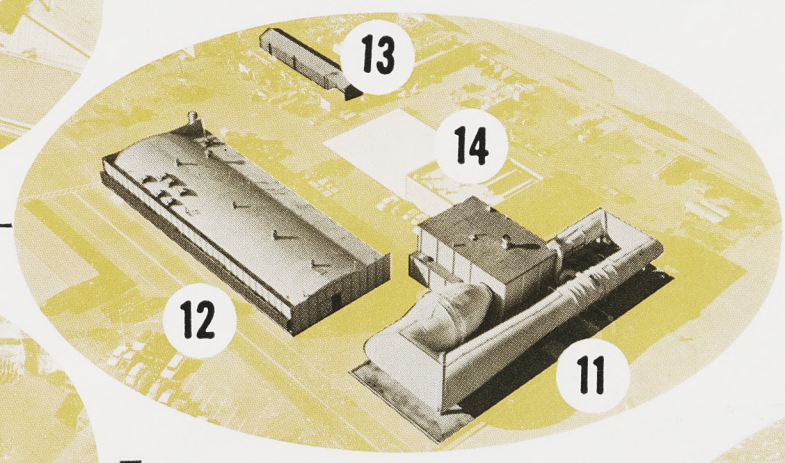
(8) New Cafeteria—1957; 26,360 square feet; $586,000.

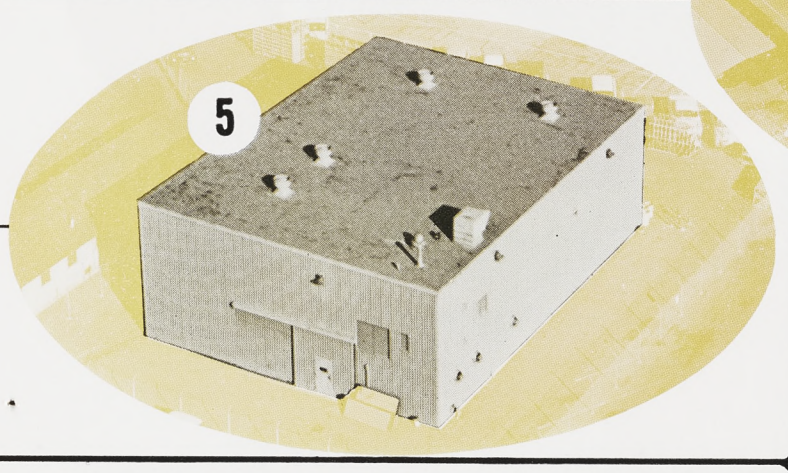
(9) Tank Sealant Building — 1957; 12,000 square feet; $200,000.



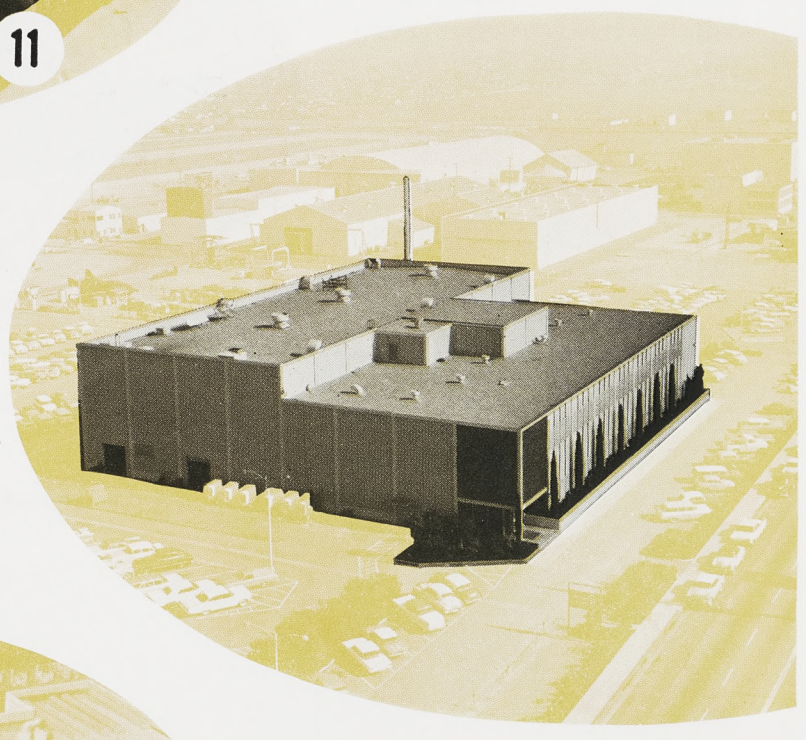


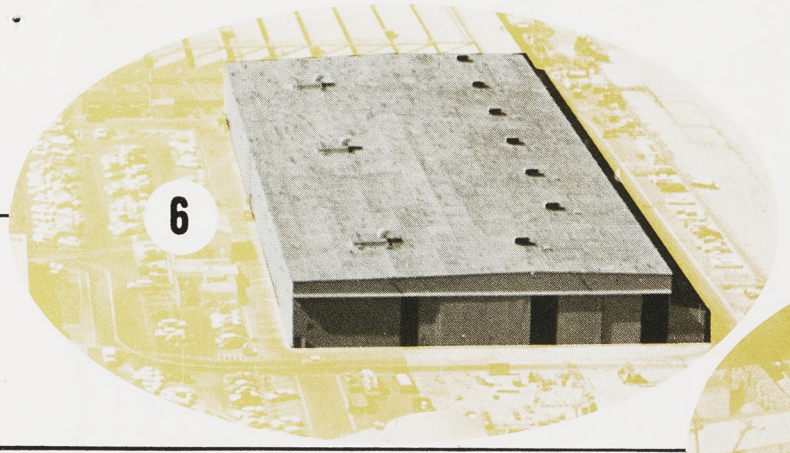


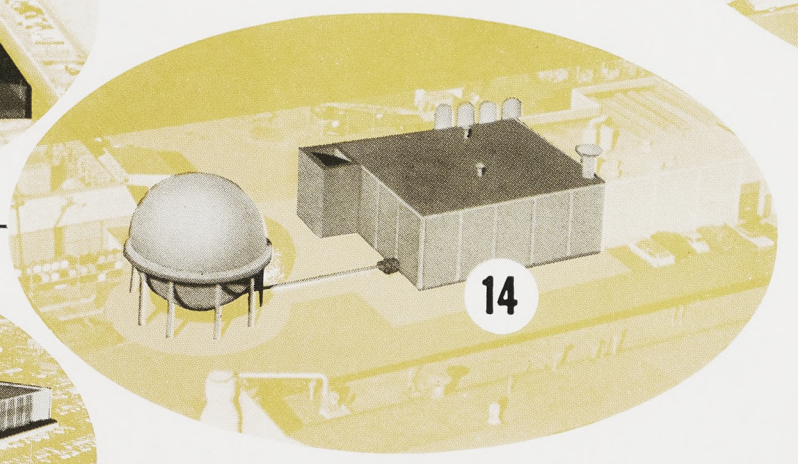


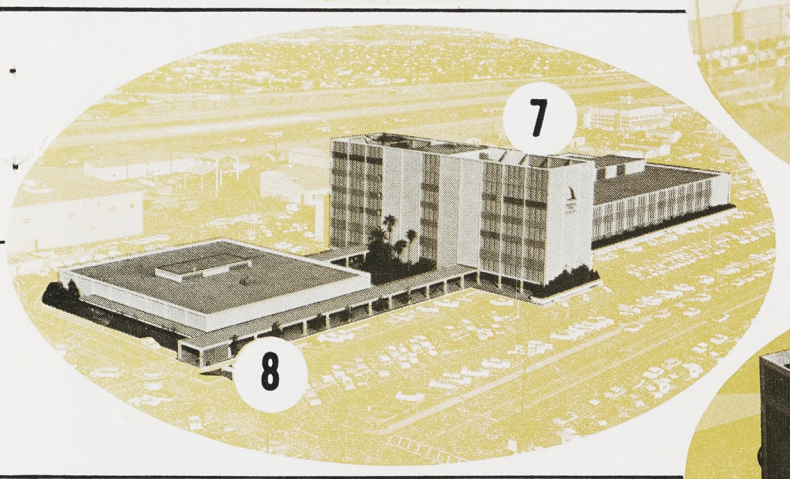


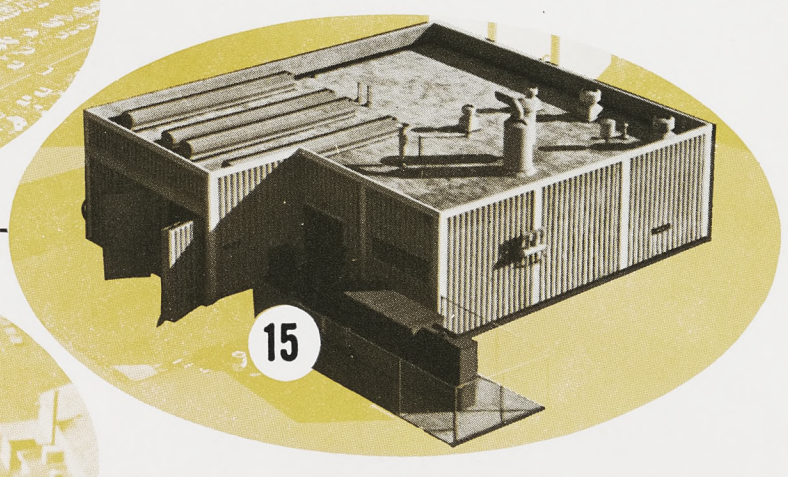
RESEARCH CENTER — Norair's new Research Center, building completed December, 1956, comprises 46,800 square feet; is a two-story building valued at $874,000. This facility is dedicated to studies in deep science.

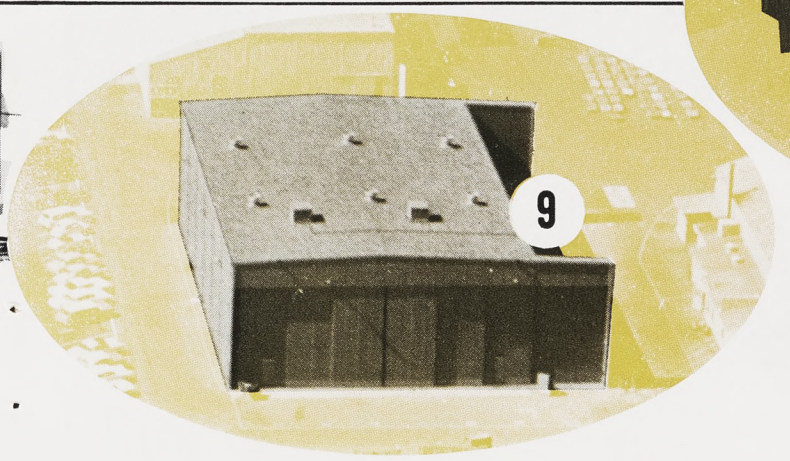












(10) Products Display Building —1957; 7000 square feet; $105,000.

(11) Low Speed Wind Tunnel— 1956; 6460 square feet; $908,000.

(12) Model Shop — (Remodeled); 1957; 15,340 square feet; $30,000.

(13) Industrial Supply — 1956; 2000 square feet; $10,000.

(14) Hypersonic Facility — See individual photo.

(14) Hypersonic Facility—Now in design stage. Will be multi-million dollar facility capable of speeds up to Mach 14. This unique addition to Norair science and engineering capability will do research and development in the fields of hypersonic aerodynamics and missile technology. Its configuration research will bridge know-how between the Mach 3 aircraft on the boards today through upcoming concepts for ships with speeds of Mach 5, Mach 10, and Mach 15.

(15) Inlet and Duct Facility— 1959; 3550 square feet; $297,000.

(16) Engine Test Cell — USAF; 1957; 9050 square feet; $462,000.

(17) Environmental Test Lab— USAF; 1957; 24,800 square feet; $329,000.

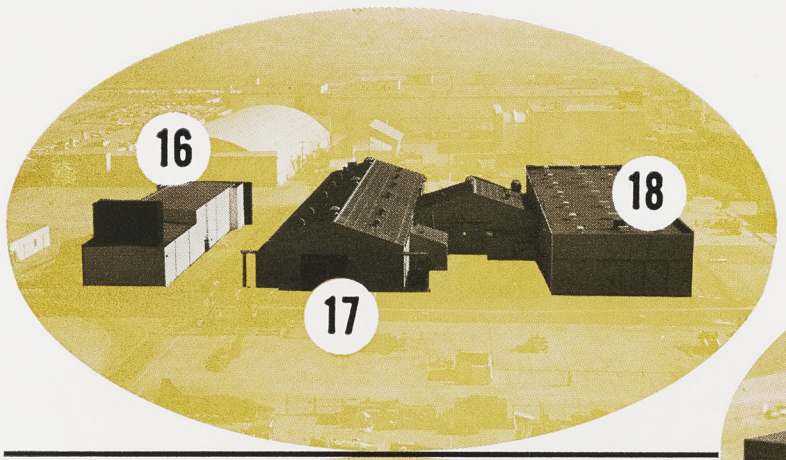
(18) Environmental Test Lab addition—1958; 18,200 square feet; $154,000.

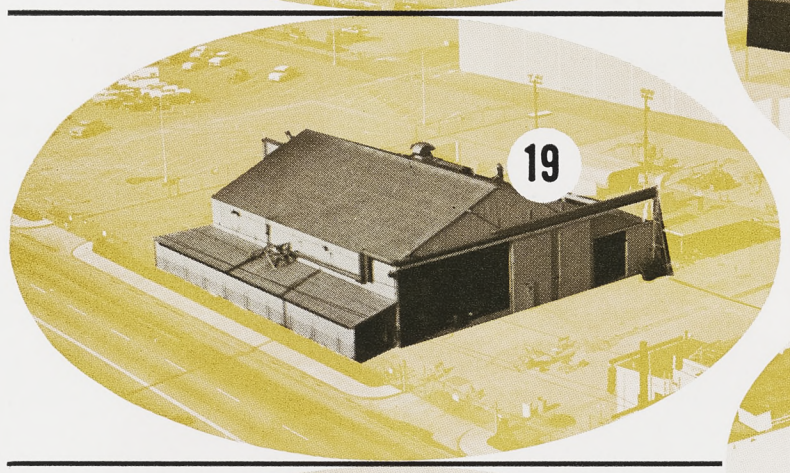
(19) Fuel Test Building—USAF; 1952; 8250 square feet; $222,000.

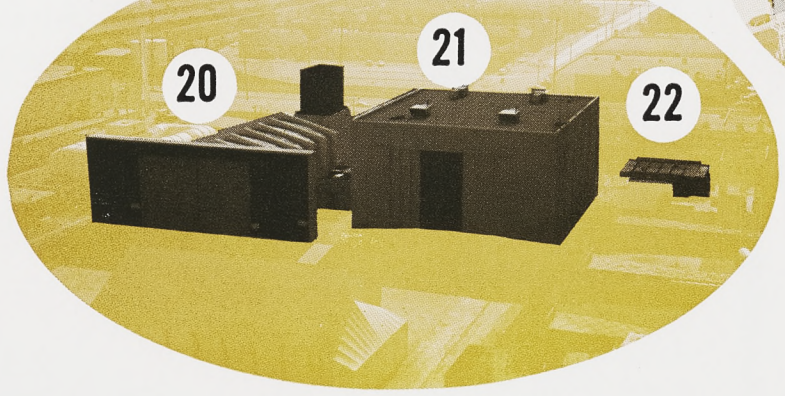
(20) Missile Test Cell—USAF; 1957; 8100 square feet; $590,000.

(21) Missile Check-Out Building — USAF; 1957; 11,200 square feet; $292,000.

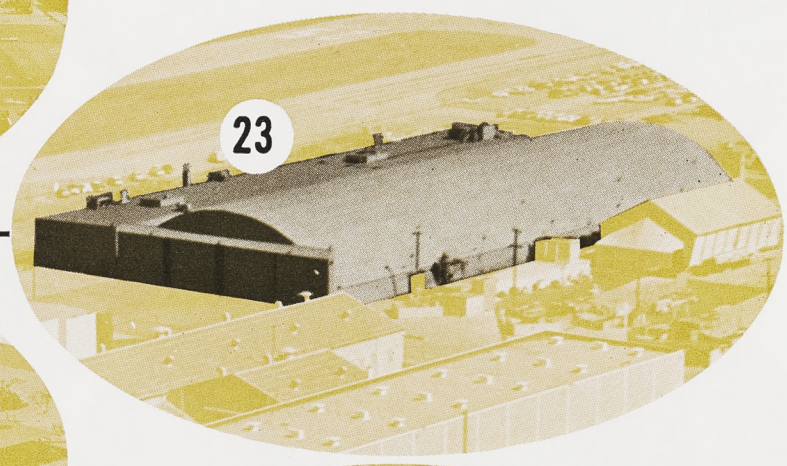
(22) Screen Room Building— USAF; 1956; 1300 square feet; $29,000.

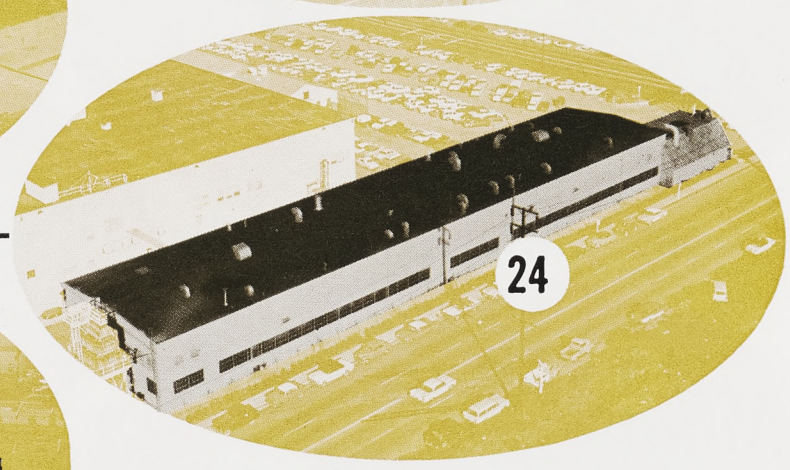




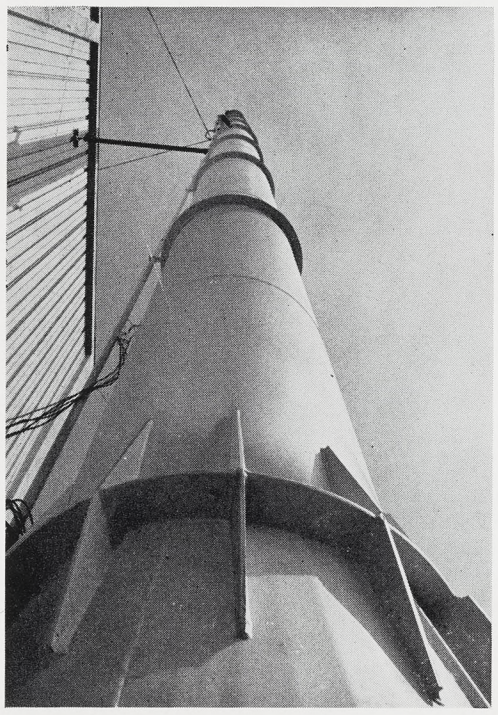


(23) Radar Hangar — and Advanced Production area; USAF; 1952; 93,000 square feet; $585,000.



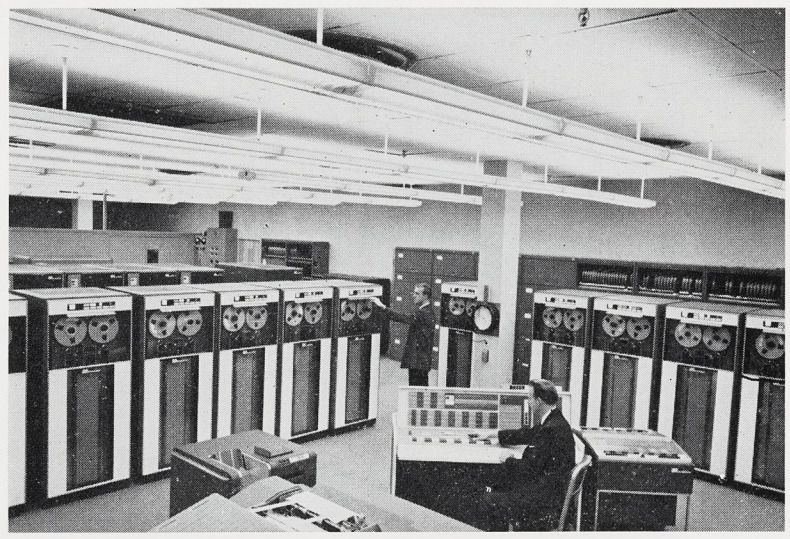


(24) Process Building, Remodeled — USAF; 1957; 21,000 square feet; remodeling cost $85,000.

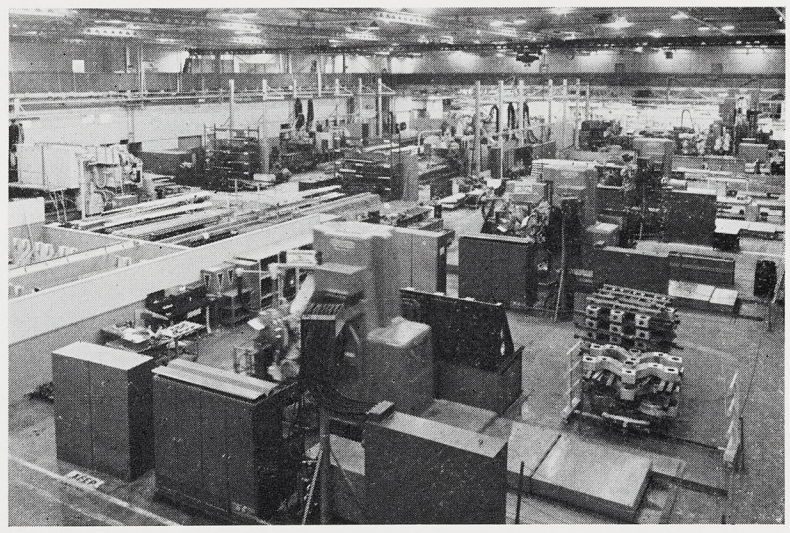


ZERO G TOWER — Photo shows Norair's new Zero gravity tunnel in which space substances are subject to test in the weightless condition. Tunnel drops reveal surface properties of materials and compounds in Zero gravity environment. Research facts established by this tunnel help point the way for Norair Division space concepts.

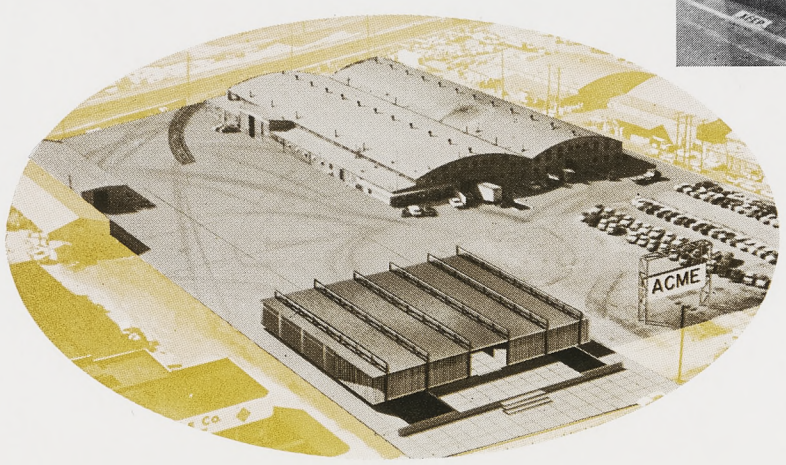
THE IBM 7090—First photo of Norair's new 7090 IBM computing and data processing equipment. The IBM 7090 is one of the most modern and versatile computing and data processing systems available in the world today. New system replaced former 704 installation.



MOST MODERN—Norair Manufacturing's numerically-controlled production machinery. Note spic-and-span condition of work area, note also, close attention to color dynamics which makes for compatible surroundings. In the past 10 years, Norair Division has sustained constant program of updating and modernizing equipment. Acquisitions for period show a value of over $8,800,000.



ACME — Artists sketch shows Acme Metal Molding's new office building to be the first such major structure in the world built entirely of aluminum. Design is now under way. Structures in rear are existing buildings at Acme's new main office headquarters site off Santa Ana Freeway.



NORTHROP CORPORATION
NORAIR DIVISION

Their Business: Company Transport

A DEDICATED GROUP — Norcrafters who are charged with operation of Company Transport Aircraft, standing from left, Darrell Ragan, flight line mechanic; Tom Kennedy, supervisor, flight crew equipment; Ole Olson, flight line crew chief; Jack Miller, executive pilot; Orby Blair, foreman, Company Transport Aircraft; Max Stanley, chief Flight Support Operations; Gordon Barber, flight line crew chief; Buzz Carroll, dispatcher; and Tom O'Malley, executive pilot; and Stan Winchester, executive pilot. Front, from left, Sergio Gonzalez, radio technician; Dick Fields, coordinator; Fred Dehart, flight line mechanic; George Mihelic, jr., data recorder; and Clarence Pohl, flight line mechanic.

Million Miles for Norair Fleet In 1960, Over 14,000 Passengers

Bigger business than you'd think.

That's the operation of Company transport airplanes. Authority on the subject is Orby Blair, foreman, Company Transport Aircraft.

"We flew just short of a million passenger miles in 1960," says Orby. "To be exact—986,020 miles both Company owned and chartered airplanes.

"Over 14,000 passengers during the year.

"Over 5000 flights.

"About 2600 hours.

"Our longest flights? To Florida on the Snark project. But most of the trips were interdivisional, and to Palmdale and Edwards.

"We broke in two new Aero Commanders last year and yet we are proud to say that we missed very few schedules. Actually, most of the time our two airplanes and one helicopter were on a daily schedule of eight round trip flights to the desert plus the scheduled runs to Anaheim and Van Nuys. This means good crew and good piloting. We have both, plus close cooperation with everybody concerned. Dispatchers, supply, supervision, management, weather, and tower.

"Norair's fleet serves the entire Corporation. Last year, we had one DC-3, one C18-S Beech, and the Bell 47-J helicopter. We don't have the Gooney Bird now or the Twin Beech. The DC-3 was sold to a retired industrialist from San Francisco. The Beech was a trade-in last February on the Aero Commanders.

"Here comes the whirley bird in from Palomar," said Orby. "Got to go. We've got a special flight coming up to Acme over on the Santa Ana Freeway. Mr. Nolan and Mr. Lloyd."

How far is a million miles? Two round trips to the moon with some to spare.

Over 14,000 Company passengers safely transported on the business of the aerospace age.

Fleet Norcrafters are a dedicated group who pay close attention to their highly important, sometimes critical tasks. All Norcrafters who have had occasion to fly by Company airplane will agree.

Relativity

(Continued from Page 1)

But, the Northrop physicist declared, if the traveler received no reverse thrust or acceleration back to earth—waiting until free fall brought him back—he would return older than a person with the same birth date.

On the other hand, Dr. Benedikt said, if the traveler accelerated his return to earth by use of rockets or other devices, he might return younger than a twin remaining on earth.

The change in time involved would be small, he said. For example, a trip to one of the nearest stars, Proxima Centauri, would take 48 million years in free fall to cover the four light years between the star and earth. If it were possible for him to live that long, the returning astronaut would be nine months older than his twin, Dr. Benedikt said.

Buy Bonds

DR. COX WILL MODERATE PANEL ON RELIABILITY

Norcrafter Dr. W. E. Cox, chief, Norair Reliability, will be a panel moderator for the upcoming Second Annual Reliability Symposium to be held at the Statler Hilton Hotel, February 22.

Subject of Dr. Cox's panel will be "Some Comments on the Semantics of Quality Control and Reliability."

The symposium is designed to present the latest aspects of Reliability management to executives and managers of the American industrial complex. Special emphasis will be placed on costs.

Tickets and additional facts on the meeting are available from Norcrafter Irving Quart, Organization 3722, extension 1266. Mr. Quart is symposium information chairman.

NEWS BRIEFS

(Continued from Page 1)

Technological Airplane Project Department, "The conference was marked throughout by an atmosphere of cooperation. Basic premises and configuration details were studied intensively. Significant progress was achieved in all program areas."

WHAT'S NEXT?—With the T-38 flight test programs nearing completion at Edwards, what happens to the T-38's in the Category I and II programs? With nearly 2000 flights behind them, their work is just beginning. Various Air Force units have requirements for T-38 speed, maneuverability and short turn-around time. The aircraft will be retrofitted with the modest changes made in the production model, and will be assigned as follows: four to Fighter Operations at Edwards for support aircraft (chase, pacer, etc.); four to the Edwards Flight Test School for the training of test pilots; three to the Air Proving Ground Center, Eglin AFB, Florida, for flight support in ARDC research and test operations.

EXPANSION AT PALMDALE—Because of programmed increase in T-38A final assembly and flight acceptance activities at USAF Plant 42, Palmdale, Norair Division will be assigned 55,000 square feet more space there. The space is now occupied by Lockheed.

JACK WELLS—Jack Wells, formerly senior Engineering test pilot, has been named chief test pilot, it has been announced by George Douglas, vice-president, Engineering . . . Mr. Wells reports to Lew Nelson, director, Flight Test section.

C-NOTES PAID FOR REFERRALS

Classifications eligible for $100 employment referral awards:

Engineer
Senior Engineer
Engineering Specialist
Senior Technical Specialist
Senior Research Analyst
Scientist
Senior Scientist
Research Scientist

Referral cards are available at all employment offices.

AFNS — Outgoing President Eisenhower's proposed $42.9 billion budget for 1962 contains $19,344,000,000 for the Air Force. Out of this, the Air Training Command is scheduled to receive funds earmarked for adding 200 new T-38 and T-39 jet trainers to modernize flight training program. . . . The B-70 Mach 3 bomber will be pushed to a scheduled 1963 test flight. The KC-135 tanker production will be maintained at present levels. . . . Air Force Research, Development, Testing and Evaluation programs are to receive $1.6 billion for the year. . . . USAF 1962 expenditures are to exceed those of 1961 by $450 million. . . . Navy's budget for 1962 will be $12 billion; the Army $10 billion.

Radioplane Moon Landing System

CONCEPT of a lunar landing of the future. Research work and a design analysis by Advanced Systems Engineering Section of Northrop Corporation's Radioplane Division have furnished sufficient scientific information for Radioplane engineers to design system which will safely land a vehicle on the moon. Since no atmospheric gaseous layer condition exists on the moon, vehicular landing would be accomplished by retro-thrusting deceleration and guidance systems. For Venus, Mars, gaseous atmosphere layers could be used for deceleration purposes, via combination of retro-thrusting systems and parachute systems. Radioplane is engaged in study to determine the requirements for the locomotion of a lunar prospector vehicle. Included in the study are vehicular surface movement control and guidance requirements under all anticipated surface conditions.

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

FORD, 1948, 2-dr. sedan, 301 cu. in. Corvette eng., Bendix elec. fuel pump, 11" new clutch, La Salle trans., 4:11 rearend, heads ported & polished, dual pipes, 30" glass-packs, cost $1500; $650. LU 2-2233. A

PUPS, basset, AKC registered, 8-wks-old, excellent line, $85. ED 5-9360. A

BABY EQUIPMENT, bassinett, $6; crib, mattress, bumpers, $21; playpen & pad, $6; car seat, $3; stroller, $7; hi-chair, $7; 2 steel clothes poles, $5. FR 9-5690.

BICYCLE, 24", boy's, J. C. Higgins, red & white, $15. FR 1-1726. A

JOINTER-PLANER, 4½" w/extension bed, $20. DA 4-8586. A

SWING SET, glider & 2 swings, $15. DA 4-6203. A

BUICK SPECIAL, 1956, conv., R/H, Dyna., power steer & brakes, w/w, tonneau cover, $675. HO 2-1550. A

FORD, 1954, custom Ranchwagon, Ford-omatic, R/H, $495. FR 4-6003. A

FORD VICTORIA, 1955, Fordomatic, R/H, power steer., $690. OS 5-1825. A

CADILLAC, 1953, 4-dr, Hydromatic, R/H, power steer., $675. CI 2-0057. A

OUTBOARD MOTOR, 1959, Model 55A Mercury, ride guide steer., fuel tanks, all controls, bronze prop., used less than 30 hrs., $450. OS 6-2435. A

POWER EDGER & TRIMMER, Lindell, Briggs & Stratton, 4-cycle eng., 2 hp, recoil starter, $45. Box 501. A

RANGE, gas, 5-mo.-old, $85. NE 5-3294.

AUTO, Plymouth Cranbrook, 1953 2-dr, R/H, good body & paint, recent tune-up & rad. job, $375. PL 6-3472. A

CHEST SET, 2, blonde, solid ash, excellent condition, cost $85 pr.; $30 ea. or both for $50. PR 2-5526. A

SUNBEAM ALPINE, 1954, classic, $700. Box 502. A

SANDER, Mall, hand-type, 3" wide endless belt, $40. DA 4-7254. A

PONTIAC, 1950, good trans. car, $100. EM 9-2231. A

BUICK CENTURY, 1938, 63,000 mi., dual fen. mounts w/tires, comp. w/orig. owner's manual, $125. FR 9-9616. A

FENCE, chain link-type, hvy. duty, 6' high 30' long w/pipe, post, bars & caps, $25. DA 4-0445. A

GOLF CART, Caddy Master Deluxe, w/score card attach., $10. FR 6-3981. A

ACCORDION, Sylvania, full base, blue, case & straps, $150. DA 9-6025. A

STATION WAGON, Dodge Sierra, power steer., htr., w/w, tubeless, under 20,000 mi., perfect condition, cost $4372, my equity $1100, $1750. GA 3-6579. A

PISTOL, Ruger Blackhawk, .44 magnum, 6" bbl., w/Lawrence full-flap holster, $75. Box 504. A

HOUSEHOLD EQUIPMENT, TV, 17", portable, $60; vacuum cleaner, Cadillac, upright, $15; light fixture, flourescent, 8', 4-tube, w/chains, $15. DA 6-1572. A

HI FI SYSTEM, 3-spd. changer w/magnetic cartridge & diamond stylus, 7W amplifier & pre-amp, FM tuner, 8W speaker, all in acoustically designed cabinet, $75. TH 6-5589. A

RIFLE, Manlicher Schoenauer, 7-mm, w/shells, $150. OS 9-6449. A

AUTO, DKW, 2-cycle eng., front wheel drive, new pistons, 28 mpg, $695. CL 7-0895. A

CAMPER, aluminum, for pickup, 48" wide, 78" long, 30" high, $125; drawbar for Willys Jeep or pickup, $10. TE 3-3968. A

CHEVROLET, 1947, 4-dr., sedan, R/H, direct. signals, $150. OR 7-8775. A

STUDIO COUCH w/bolster, green, $32. FA 8-0450. A

ENGINE, 1948, Ford, short block, $15. DA 4-8663. A

HOUSEHOLD FURNISHINGS, dinette set, Virtue Bros., 36"x48", gray table & 4 red chairs, $55; hide-a-bed, Simmons, charcoal, $100; lamps, table & floor-type, $10 & $15; dining room set, mahogany, folding-type table w/4 Lyreback chairs, $50. TO 7-0593. A

SA FIRE INJECTOR PLUGS, never installed, cost $1.49 ea., $10. FR 5-0061.

FORD, 1957 Country sedan station wagon, T-Bird eng., w/w tires, R/H, power steer. & brakes, $1100. DA 3-4329. A

BOAT, fiberglassed, 16' Fleetwood, 35 hp motor w/elec. starter & generator, tilting trailer, complete w/running lites, gas tank, life preservers, & ski rope, $975. OS 6-6108. A

FREE (to be given away)

RABBIT, Hymacayan, & pen, 2-yr.-old, white, gray feet, OR 2-1064. D

HOMING PIGEONS. FR 1-2705. D

RENTALS OFFERED

APT., 2-bdrm., garage & laundry rm., built-in stove & range, drapes, unfurn., $110 mo. OS 6-6690. E

CHILD CARE WANTED

CHILD CARE WANTED, lite housekeeping, preferably live-in. Box 503. H

PERSONALS

THANKS to all my friends for their cards & messages during my recent illness. WALTER STARLING. L

FREE RENT in new deluxe apt., 1 & 2 bdrm., drapes, carpeting FM music, garage, for 2 wks. PL 7-7611. L

SEWING & ALTERATIONS, very reasonable, work guaranteed, 5 min. from Northrop. OS 6-5782. L

FLYING CLUB openings available, 140, 170 & Bonanza at Hawthorne, from $4 per hour, wet. GL 4-7770. L

FOR SALE OR TRADE

SOUND PROJECTOR, 16mm, 2 pc., Victor Animotograph, 950W, $95 or trade for silent 16mm projector, 750W. FA 5-0122 M

RIDES WANTED

7 a.m. — 3:45 p.m.

STUDEBAKER & ROSECRANS, Norwalk. Jack Kelley, ext. 2206, UN 4-4143. 2

7:30 a.m. — 4:15 p.m.

SAN BERNARDINO FWY. & AZUSA, Glendora. In general area between Pomona & Pasadena. Miles B. Thompson, ext. 707, 708, ED 5-9360. 3

PRAIRIE AVE. & 138th ST., Hawthorne. Myra Leighton, ext. 713, OS 6-0582. 3

WESTERN & 247th, Harbor City. Geo. M. Savidan, ext. 707, DA 6-1711. 3

KATELLA & 7th ST., Los Alamitos. Max Lester, ext. 2451, GE 1-9354. 3

8 a.m. — 4:45 p.m.

BLOOMFIELD & LEMMING, Artesia. G. D. Hoffman, ext. 1718, UN 5-6803. 5

LOMITA BLVD. & WESTERN AVE., Lomita. Judith K. Starnes, ext. 1678, FA 8-8308.

MANHATTAN BEACH BLVD. & SEPULVEDA, Manhattan Beach. L. A. Wolslager, ext. 1305, FR 2-0644. 5

ARDMORE & LONGFELLOW, Manhattan Beach. E. E. Robinson, ext. 646, FR 6-3859. 5

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ARDMORE & LONGFELLOW, Manhattan Beach. E. E. Robinson, ext. 646, FR 6-3859. 15

NRC GEM AND MINERAL PLAN BIG SHOW

Lupi Saldana To Address NRC Surf Fishing Meet

The NRC Surf Fishing Club, John Pawlicki, commissioner, has scheduled Lupi Saldana, Los Angeles Mirror Outdoor columnist as featured speaker for the Club meeting, Tuesday, February 7, 7:30 p.m.

Mr. Saldana will discuss the professional approach to surf fishing. Topics include bait, geographical location, times, and other items of ecological science as applied to fishing from shore.

To prove and assure that the meeting will be the banner indoor event of the year, the annual surf fishing awards will be presented to Norcrafter winners.

BOWLING FAME BRUSHES NORAIR

Bowler's hall of fame came close to Norair recently.

Norcrafter Bessie Mathers night shift, reports her brother-in-law Chuck, bowled a 300 game during NRC night shift league at Del Mar.

The alley presented Chuck with a nice check of $500 and NRC presented him with a fine trophy.

Meanwhile, a Norcrafter-in-the-flesh, Herb Wong, Engineering Lab Services, earned a special NRC trophy with a 738 scratch. He bowled 223, 257, and 258.

MARIPOSA LEADS IN SAFETY RACE

In the current year-long contest for industrial warehouses being staged by the National Safety Council, Norair's Mariposa now occupies first place. The competition is four months along. Twenty-two other warehouses are competing.

The contest will end June 30, 1961.

THEME: A RAINBOW OF GEMS

A rainbow of gems!

The second annual show of the Gem and Mineral Club will be staged February 25 and 26, it has been announced by Club Commissioners Bill Puniwai, days, and Doyle Shook, nights.

The show will be held at the NRC Clubhouse.

The G & M show promises to be an excellent repeat of last year's outstanding exposition. Both commissioners wax poetic when describing what is in store.

Displays of minerals and gems, both Norcrafter exhibits and G & M society exhibits from all over Southern California.

Working demonstration of gem finishing, including faceting, grinding, sawing.

Mounting techniques with a full fledged exhibition of silver working.

To top it all off, there will be a continuous showing of Walt Disney's "The Living Desert."

Times of the show, February 25 is 10 a.m. to 10 p.m. February 26, 10 a.m. to 6 p.m.

There is no admission charge.

The general public is invited.

SYMPHONAIRES ON LOOKOUT FOR MORE SINGERS

The NRC Symphonaires are on the lookout for more voices, it is announced by Ron Henderson, commissioner.

No previous voice or choral training is necessary, says Ron. The only requirement is the desire to sing.

During the next few months, the Symphonaires are scheduled to sing at churches, colleges, conferences, service clubs, and others. To join up is easy.

Meetings are held every Tuesday, 7:30 p.m., NRC Clubhouse.

Now is the time for those barber shop quartette types to unlimber their vocal chords somewhere else besides the shower.

NRC VIGNETTE:

The Dance Class Club

THE NRC BALLROOM DANCE CLASS—An old timer and a good timer on the NRC roster of clubs, the NRC Dance Club, Kay Walker, commissioner, specializes in teaching Norcrafters the latest in ballroom dance steps. Currently under way are classes in the waltz and fox trot. Cha Cha training has just been completed. Instructor at right in photo is Bill Smith. In foreground practicing the 3-4 time routine are Virginia Maracek and Paul Serafin, and Irma Himmelbauer and Jim Neal. Instruction sessions usually last ten weeks for each category of dances. Registration for the current waltz and fox trot closes tomorrow night, February 2. Classes are under way for two hours, 8:30 to 10:30 p.m., every Thursday night. Cost to defray instructor charges is $10 for 10 lessons. Says Commissioner Kay Walker, "Everybody is invited to join this Club. If you do, we'll teach you how to dance—no matter."

NRC Good Time Table for February

For enrollment or information on activities listed below, call or contact Personnel Activities, Plant One, extension 2784. All clubs meet at the NRC Clubhouse unless otherwise noted.

ART CLUB
Meet in Annex Thursdays, 7 p.m.

BALLROOM DANCE CLASS
Thursdays, 8:15-10 p.m. Newcomers welcome.

BASKETBALL, Bill Greene
League play Tuesdays p.m. Practices, Saturdays a.m. at Leuzinger Gym.

BIBLE STUDY, C. J. McGuire
Plant I—Daily, 11:30-12:15, Tool Design Bldg., 11-11:45, 5566 Conf. Room.
Plant II—Mondays & Thursdays, 12-12:45, Conf. Room 2.
Eng. Center—Daily 12-12:45, Reliability Conf. Room.

BOAT CLUB, Sandy Friedfeld
Beachcombers Ball, March 4, 9-1 p.m. Tickets $1.45.

BOWLING (days)
Winter leagues rolling.

BOWLING (nights)
Winter leagues rolling.

BOY SCOUTS
Sea Scouts meet Tuesdays, 7:30 p.m.
Cub Scouts meet 4th Friday, 7:30 p.m.
Boy Scouts meet Thursdays, 7:30 p.m.

CAMERA CLUB (days)
Meet 1st & 3rd Wednesdays, 7:30 p.m.

CAMERA CLUB (nights), Gene Beck
Meet 1st & 3rd Saturdays, 8 p.m.

CAMPING CLUB, Fred Armstrong
Meet 1st Wednesday, 7:30 p.m.

GEM & MINERAL CLUB (days)
Bill Puniwai
Meets 2nd Wednesday, 8 p.m.
2nd Annual Gem & Mineral Show, February 25, 10 a.m.-10 p.m. February 26, 10 a.m.-6 p.m.

GEM & MINERAL (nights), Doyle Shook
Meeting place varies.
Meet 1st Wednesday, 1 p.m.

GOLF, Bill Putnam
Gilman Hot Springs, February 18, cost $4.

MIXED CHORUS, Ron Henderson
Meets Tuesdays, 7:30 p.m. All are welcome.

MODEL RAILROAD, Jack Wilson
Meet in Annex, Thursdays, 7-10 p.m. Visitors welcome.
Operation night, 1st Thursday of month.

RADIO CLUB, Paul Serafin
Meet last Thursday, 7:30 p.m. Radio code class meets Tuesdays, Wednesdays, Thursdays, 7:30 p.m. NRC's station is W6VPZ.

RIDING CLUB, Tex Statley

SKEET CLUB, Bob Bagby
Shoots alternating Saturday, February 11, 25, at Rancho Angelus Range, Main & Broadway, 10 a.m.

SKI CLUB, Bernie Shyffer
Meets 2nd Wednesday, 7:30 p.m.

SKINDIVING, Ralph Gonzales
Meet 3rd Tuesday, 7:30 p.m.

SPORTS CAR CLUB, Bill Perry
Meet 2nd Thursday, 7:30 p.m.

SQUARE DANCING, Dick Rinehart
Henry Clay Jr. Hi, 124th & Western, Fridays, 8-11 p.m. New class forming.

SURF FISHING, John Pawlicki
Meets 1st Tuesday, 7:30 p.m. Guest speaker Lupi Saldana, L.A. Mirror columnist.

TENNIS, John Potts
Free instruction Saturday, Feb. 4, 18, 10 a.m., at El Camino Jr. College. Practices every Saturday. Indus. League play alternate Sundays.

TOASTMASTERS 212 (days), Jack Apodaca
Meet at Cockatoo Inn Thursdays, 6:30 p.m.

TOASTMASTERS 1398 (nights), Jay Rayner
Meet at Western Ave. Country Club Thursdays, 12:15 p.m.

TRAVEL CLUB, Howard Cornelius

FOR THE LADIES

BOWLING (nights), Gloria Bagley
Winter leagues rolling.

BOWLING (days), Corinne Davis
Winter leagues rolling.

GIRL SCOUTS
Mariners, Tuesday, 7 p.m., Naval Reserve Center, 201 W. 126th St., Hawthorne, ages 13-18. All Norcrafter girls welcome.

KNITTING, Ethel Simpson
Meets Thursday, 7:30 p.m. Free instructions each meeting.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, February 15, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — RAPID CITY, PRESQUE ISLE, EL PASO

AN EDITORIAL
The Dashboard Must Go

Breakthrough, in modern aerospace language, means a scientific advance of great benefit to man.

Laminar Flow Control is a breakthrough.

But there are fields other than scientific where breakthroughs are needed, in fact imperative. One is the industry's leaning tower of complex, outdated and unwieldy operating systems. Norair is doing something about this.

Breakthroughs are not easy. They are in essence, change. And change is challenged at every step by status quo, by tradition, by custom, and by inhibited thinking.

A workday illustration:

The dashboard of the buggy which persisted for many years in automotive design. It gave way only in recent times to the firewall. Last remnant after half century is a name for the instrument panel. Dash.

Now the aerospace industry is the boldest industry. We are supposed to thrive on change. We do not have sacred cows. We are on our way to the moon. To Mars.

But are we really so bold?

Is it possible or true that we are cutting the orders for space flights with a quill? Quite possible, and we will soon find out how true.

Dick Nolan, our Corporate vice-president and Norair general manager, is a man of tremendous drive and will. One expression of this is his constant search for better ways to attain the goals of this Division.

He has launched such highly successful and challenging programs at Norair as PACE, Product Analysis, Operation Forward, Value Analysis, Target Cost System, and Automated Operations Control.

Last week, Mr. Nolan issued the Division another challenge; an exciting one, one to which every Norcrafter can and will lend a hand. He has picked a fertile field in which to work, one of national importance. It is the field of excess business baggage.

In a communication to all department managers, he asked for—and we quote:

". . . A review of every function and operating system in the Division.

". . . Elimination of the unnecessary functions, systems, procedures.

". . . Today's competition demands that we must free ourselves of menial and unproductive paper shuffling in favor of creative and productive efforts.

". . . We are always in danger of becoming slaves to our policies and procedures rather than insisting on these instruments being the tools of simpler and better performance.

". . . Many of our systems were developed over a period when we were totally an airframe contractor and are suspect as being tradition-bound and stereotyped."

What Mr. Nolan says, means—management's aim is that people, not paper, will control this Division.

The program has already caught fire.

Names have been suggested even though there is no naming contest. Operation Round File, SAVE, SWIFT, TOSS, WHY, all with initials signifying appropriate project names.

It is emphasized, however, that the program is not merely a search to eliminate unnecessary paperwork. It is an overhaul of the entire spectrum of procedures of the aerospace way of doing business.

If wasteful or unproductive methods are found, they must be eliminated in preference for advanced methods that will be in sync of our advanced responsibilities.

It is time for us to break with the operations concepts of an accepted but costly past.

Dashboard ways of doing things have to go.

TEST FINALE FLY-BY—Seven Talon trainers in fly-by over Edwards Air Force Base on occasion of flight test completion. Tests began in April 1959. There was a total of 2000 flights, 1200 of which were military. USAF pilots completed their portion of the program one month ahead of schedule. Talon tests were most successful ever conducted at Edwards, AF officials stated.

T-38's IN TEST FINALE

PROGRAM COMPLETED AHEAD OF SCHEDULE

A formation of seven Talon jet trainers, piloted by a crack team of U.S. Air Force test pilots, raced across Southern California skies last week for the final mission of one of the most successful flight test programs ever conducted at the Air Force Flight Test Center, the Air Force stated.

The T-38's are about to be assigned to the USAF Air Training Command. The first of the supersonic advanced trainers will be delivered next month to ATC Headquarters, Randolph Air Force Base, Texas.

Commenting on the Air Force's newest jet aircraft, Brig. General John W. Carpenter, commander of the Flight Test Center, recalled that there have been problems with all new aircraft, "but this aircraft has given us less trouble than any I can recall."

The 22-month test schedule conducted by USAF and Northrop test pilots began in April 1959, and amassed a total of some 2000 flights. The 1200-flying hour military portion of the program was completed by USAF test pilots one month ahead of schedule.

The T-38's provide speeds of more than Mach 1.2, altitudes up to 60,000 feet and a rate of climb of 30,000 feet a minute. A total of 213 T-38's are already on order.

Leader of the seven-Talon flight was Major Swart Nelson, T-38 Project test pilot.

COL INCREASE

A cost-of-living increase of .01 cents an hour was made effective February 6, it has been announced by Corporate Vice-president and Norair General Manager Dick Nolan.

Increase was result of a .7 rise at the December 15, 1960 reading of the Bureau of Labor Statistics index.

Paving Jobs Will Ease Traffic

Rush-hour traffic jams are in store for the next six months.

Crenshaw currently, and Prairie next, are being widened, drained, guttered, repaved, and relined between 120th Street and El Segundo Boulevard.

The work is being closely coordinated between Los Angeles County and the City of Hawthorne.

When completed sometime in August, except for one portion—the 120th Street bridge, the work will alleviate plant to-and-from work snarls for some years to come, it is stated by Willard Lindstrand, Norair chief, Facilities and Plant Engineering.

Crenshaw is being widened to

(Continued on Page 2)

DISCUSSION—Major Swart Nelson, T-38 project test pilot; Lt. Colonel James C. Pedersen, Edwards T-38 test director (signing), Edwards Deputy Commander Colonel Paul C. Ashworth, Corporate Vice-president and Norair General Manager Dick Nolan and Northrop President Thomas V. Jones discuss T-38 test records during Edwards ceremonies. Major Nelson was the second man to fly the Talon, May 1959.

NORTHROP-NORAIR

NEWS BRIEFS

LFC APPROVAL—Configuration for the LFC airplane received USAF approval last week, it has been announced by Milt Kuska, manager, Laminar Flow Control Technological Airplane Project Department . . . First wing test section is now in fabrication. Final aerodynamic lines will be released upon completion of Cornell wind tunnel tests this month.

GENERAL ESTES—Major General Howell M. Estes, jr., assistant DCS/O, Headquarters, USAF, and Major E. P. Deatrick, jr., visited Norair for review and briefing on the division's Air Force projects. General Estes also visited Edwards AFB to fly the T-38 Talon for the first time. Noting General Estes' favorable comments about the T-38, John Alison, vice-president, Marketing, stated, "General Estes' comments were particularly gratifying, as he is one of the Air Force's outstanding flying officers, with experience in both the operational and research and development fields."

THREE LFC AIRPLANES—An additional WB-66 aircraft has arrived by truck at Norair from Davis-Monthan AFB. Three airplanes are now assigned to the project. First airplane is undergoing disassembly and parts listing in preparation for LFC modification. Second airplane, damaged slightly in landing, will be used in project support. Third airplane, just arrived, along with the first will be modified and flown with LFC configuration.

DR. SILVERSTEIN—Dr. Abe Silverstein, director, Space Flight programs, NASA, Washington, D. C., is scheduled to speak before Company officials 16 February. Program is part of management technical session series. Dr. Silverstein will discuss propulsion state-of-the-art.

RAPID CITY BUILDUP—Norair's Titan site crew is now approaching the 300 mark with certain skills and backgrounds still in short supply. Last week, Jack Cushman, general supervisor, Industrial Relations branch and Dave Deering, chief, Weapon System Operations group, were here conducting interviews in all Divisions for engineering systems checkout men who wish to transfer to Rapid City. Specific classifications are senior field engineer, or senior installation liaison man; field engineer or installation liaison man; field installation specialist. Interested Norcrafters with the proper qualifications should contact John Andre, Engineering and Scientific Employment branch for details. Requirements for technicians are due to increase as summer months approach.

VALUE ENGINEERING—A series of 10 half day sessions on value engineering orientation for key personnel on the T-38 project will start 27 February. Engineering, Manufacturing, Materiel, and Quality Control will participate. Sessions, from 1 to 4:30 p.m., will be lecture and workshop. Ken Davidson, Value Analysis Services, will conduct. Industrial Training will sponsor. End objective of Value Engineering is lowest possible product cost without jeopardizing quality or reliability.

SAFEST IN FLIGHT—The T-38 test program is probably the safest ever conducted with a supersonic jet aircraft—not one flight accident in nearly 2,000 flight hours. Counting test and demonstration flights, T-38's have been flown by at least 135 pilots representing all U. S. armed forces and several allied air forces.

COMMUNITY HONOR—Norair News Aireporter feature story "A Front Seat in the STO," wins coveted L.A. Chamber of Commerce award for best 1960 job of relating community affairs with business and industry. In photo, Hawthorne Chamber of Commerce men, Robert S. Hartman, manager, left, and Wm. R. Ellis, president, right, extend congratulations to News Editor Charles Bradford and Corporate Vice-president and Norair General Manager Dick Nolan.

Paving

(Continued from Page 1)

an express-type highway. Left-hand turn pockets will be provided for the first time. Pockets will be at 120th Street, the entrance to Plant Three, and at Broadway. Signals will be maintained in the present positions.

Crenshaw's west side lanes, now being ballasted, are scheduled for completion in March. The east side will be completed in April. Completion dates could be delayed by rain, say contractors.

A new bridge is going in over the drain at 120th. This, a major project, will not be completed until November or December of this year. A detour is being provided around the bridge during construction.

Prairie Avenue work is due to start shortly after Crenshaw paving is completed. Target starting date is April. The east side of Prairie from immediately south of 120th through to El Segundo Boulevard is scheduled for completion in June. The west side in August. As with Crenshaw, left-hand turn pockets will be provided. They will be at the Broadway intersection.

A three-way signal will be installed at Broadway and Prairie.

Advance notice of the project was issued by Plant Security and Protection to Norcrafters via public address system and special announcement.

DOCUMENTARY FILM SHOWN

Industrial Relations personnel recently viewed a special screening of the KRCA-TV film, "Challenge Accepted," in the Plant Four theatre.

The film is a highly praised documentary on nondiscriminatory hiring in industry. Scene locale is Southern California.

Norair News Wins C of C '60 Award

A Norair News "Aireporter" feature has been awarded the Los Angeles Chamber of Commerce 1960 award for the best job of relating Chamber activities with business and industry.

The feature, "A Front Seat in the STO," was from the Chamber of Commerce point of view. It was published in June of last year. It told of Hawthorne community growth since the advent of the aircraft, now aerospace, industry.

The award was presented to News Editor Charles Bradford who writes under the "Aireporter" byline. Mr. Bradford has been a resident of the Hawthorne area for the past 35 years and has been eyewitness to the giant strides the city has made during that time.

Presentation was made under the sponsorship of the Southern California Industrial Editors Association. Other awards to Southland corporate journalists were for work in support of AID, Greater Los Angeles Safety Council, University of Southern California, U.S. Treasury, and the Merchants and Manufacturers Association.

The Hawthorne Chamber is considered the most forward organization of its kind in California providing services of both business and social nature. Newest social activity, according to Manager Robert S. Hartman, is a charter jet trip to Europe for members. The trip will take place in June.

Norair Division plans to host Chamber leaders for plant tour and lunch next month.

Know Your Government

County Elected Officials—Washington & Sacramento

UNITED STATES SENATORS

CLAIR ENGLE (D)
Senate Office Building
Washington 25, D.C.;
1010 Jackson St.
Red Bluff, Calif.

THOMAS H. KUCHEL (R)
Senate Office Building
Washington 25, D.C.
315 S. Claudina
Anaheim, Calif.

CALIFORNIA STATE SENATOR

RICHARD RICHARDS (D)
112 State Bldg., L.A. 12

LOS ANGELES COUNTY CONGRESSMEN and ASSEMBLYMEN

Showing Assembly Districts comprising each Congressional District.

Congressional District	*United States Representative*	*Covering Assembly Districts*	*State Assemblyman*
15	**GORDON L. McDONOUGH (R)** 4121 S. Bronson Ave., L.A. 8	58 63 65	**JOSEPH C. SHELL (R)** 607 S. Hobart Blvd., L.A. 5 **DON A. ALLEN, SR. (D)** 3450 W. 43rd St., L.A. 8. **JESSE M. UNRUH (D)** 803-D State Bldg., L.A. 12
16	**ALPHONZO E. BELL, JR. (R)** 152 Moreno Dr., Beverly Hills	59 60	**THOMAS M. REES (D)** 1135 S. Beverly Dr., L.A. 35 **HAROLD K. LEVERING (R)** 900 Moraga Dr., L.A. 49
17	**CECIL R. KING (D)** 8704 Tenth Ave. Inglewood 4, Calif.	46 67 68	**CHARLES EDWARD CHAPEL (R)** P. O. Box 777 Inglewood 5, Calif. **CLAYTON A. DILLS (D)** 16319 S. New Hampshire Gardena, Calif. **VINCENT THOMAS (D)** 526 N. Hanford Ave. San Pedro, Calif.
18	**CRAIG HOSMER (R)** 1115 Security Bldg. Long Beach 2, Calif.	44 70	**JOSEPH M. KENNICK (D)** 2375 Eucalyptus Ave. Long Beach, Calif. **WILLIAM S. GRANT (R)** 236 E. Third St. Long Beach 15, Calif.
19	**CHET HOLIFIELD (D)** 5707 Whittier Blvd. Los Angeles 22, Calif.	40 45 51	**EDWARD E. ELLIOTT (D)** 3404½ Whittier Blvd. Los Angeles 23, Calif. **GEORGE E. BROWN, JR. (D)** P.O. Box 32 Monterey Park, Calif. **WILLIAM A. MUNNELL (D)** 908 S. Atlantic Blvd. Los Angeles 22, Calif.
20	**H. ALLEN SMITH (R)** 1818 Verdugo Loma Glendale 8, Calif.	43 47	**HOWARD J. THELIN (R)** 500 N. Brand Blvd. Glendale 3, Calif. **BRUCE V. REAGAN (R)** 2475 Vista Laguna Terr. Pasadena, Calif.
21	**EDGAR W. HIESTAND (R)** Federal Bldg. No. Hollywood, Calif.	41 42 48	**TOM CARRELL (D)** 753 San Fernando Rd. San Fernando, Calif. **TOM BANE (D)** 5711 Lankershim Blvd. No. Hollywood, Calif. **FRANK LANTERMAN (R)** 4420 Encinas Dr. La Canada, Calif.
22	**JAMES C. CORMAN (D)** 14513 Sylvan Van Nuys, Calif.	57 64	**CHARLES J. CONRAD (R)** 13444 Moorpark Sherman Oaks, Calif. **LOU A. CUSANOVICH (R)** 6742 Van Nuys Blvd. Van Nuys, Calif.
23	**CLYDE DOYLE (D)** 8948-A State St. South Gate, Calif.	52 55 69	**GEORGE A. WILLSON (D)** 2746 E. Florence Huntington Park, Calif. **VERNON KILPATRICK (D)** 3401 Century Blvd. Lynwood, Calif. **CARLEY V. PORTER (D)** 1701 E. Compton Blvd. Compton, Calif.
24	**GLENARD P. LIPSCOMB (R)** 4606 Hollywood Blvd. Los Angeles 27, Calif.	54 56	**JOHN L. E. COLLIER (R)** 832 Cooper Ave. Los Angeles 42, Calif. **CHET WOLFRUM (R)** 4431 Sunset Dr. Los Angeles 27, Calif.
25	**JOHN H. ROUSSELOT (R)** 475 Huntington Dr. San Marino, Calif.	49 50 53	**HOUSTON I. FLOURNEY (R)** 272 W. 11th St. Claremont, Calif. **RONALD B. CAMERON (D)** 9125 E. Whittier Blvd. Pico Rivera, Calif. **MONTIVEL A. BURKE (R)** 1525 St. Albans Rd. San Marino, Calif.
26	**JAMES ROOSEVELT (D)** 5308 W. Adams Blvd. Los Angeles 16, Calif.	61 62 66	**LESTER A. McMILLAN (D)** 3670 Wilshire Blvd. Los Angeles 5, Calif. **AUGUSTUS F. HAWKINS (D)** 4251½ Avalon Blvd. Los Angeles 11, Calif. **CHARLES H. WILSON (D)** 1902 W. Florence Ave. Los Angeles 47, Calif.

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Northrop-Norair News

VOL. 19 NO. 6

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A NORTHROP CORPORATION PUBLICATION
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NORAIR DIVISION

CHARLES BRADFORD, Editor

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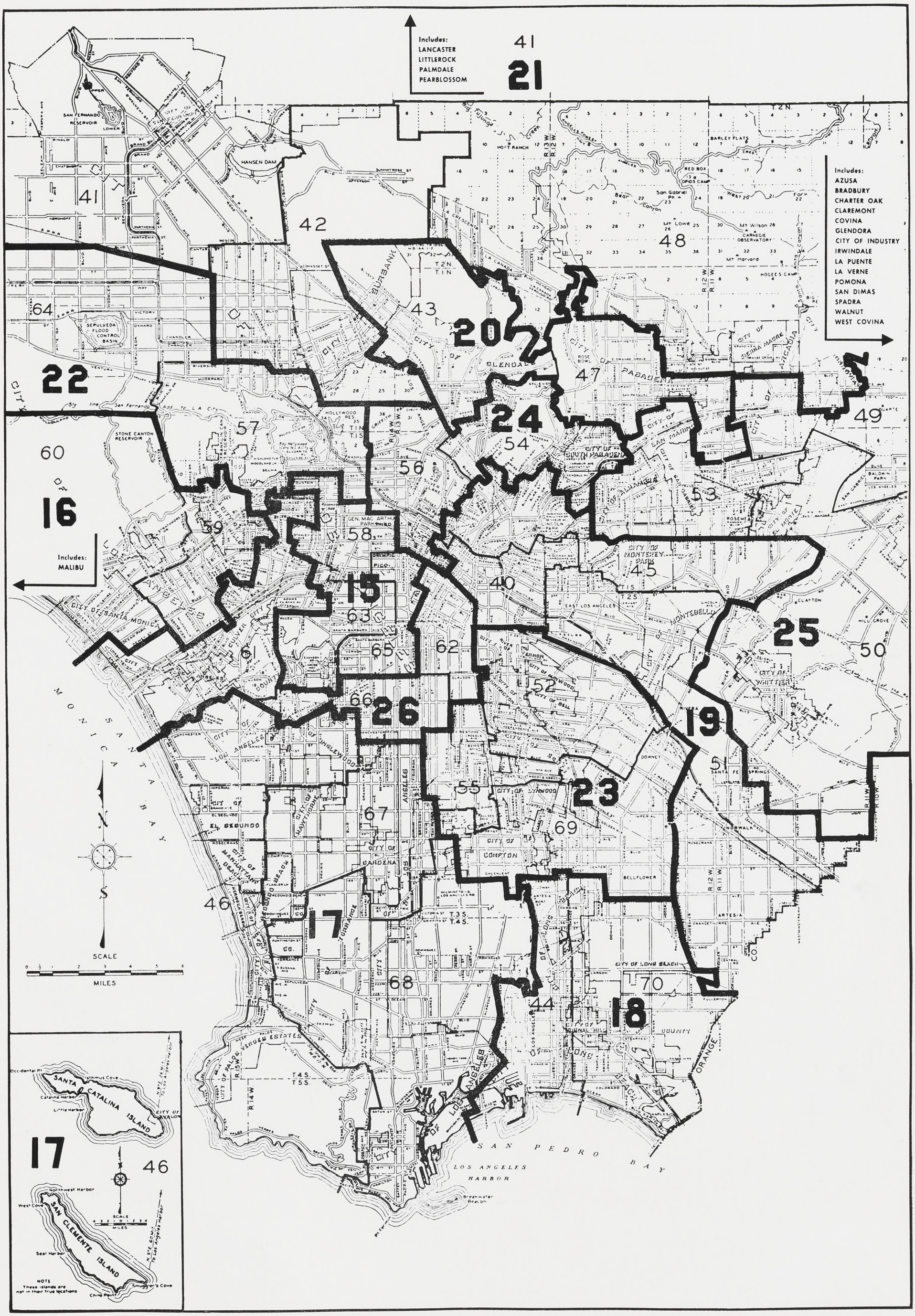
Includes:
LANCASTER
LITTLEROCK
PALMDALE
PEARBLOSSOM
41
21
Includes:
AZUSA
BRADBURY
CHARTER OAK
CLAREMONT
COVINA
GLENDORA
CITY OF INDUSTRY
IRWINDALE
LA PUENTE
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LOS ANGELES HARBOR
Breakwater Beacon
SCALE
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SANTA CATALINA ISLAND
Isthmus Cove
Catalina Harbor
Little Harbor
CITY OF AVALON
SAN CLEMENTE ISLAND
Northwest Harbor
West Cove
Seal Harbor
Smuggler's Cove
China Point
NOTE
These islands are not in their true locations
41
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RIDES WANTED

7 a.m. — 3:45 p.m.

PIER AVE. & HERMOSA AVE., Hermosa Beach. H. W. Buler, ext. 2756, FR 6-2381. 2

7:30 a.m. — 4:15 p.m.

GRACE & LOCUST, Inglewood. Nola P. McCandless, ext. 689, OR 7-3523. 3

SEPULVEDA & CULVER BLVD., Culver City. E. D. Peden, ext. 2773, EX 1-7014. 3

TOPANGA CANYON BLVD. & VENTURA BLVD., Canoga Park. William R. Faught, ext. 1386, DI 0-7216. 3

8 a.m. — 4:45 p.m.

FIGUEROA & 79th, Los Angeles. Alma Miller, ext. 1982, PL 1-5667. 5

RIDES OFFERED

7:30 a.m. — 4:15 p.m.

TOPANGA CANYON BLVD. & VENTURA BLVD., Canoga Park. William R. Faught, ext. 1386, DI 0-7216. 13

8 a.m. — 4:45 p.m.

MELROSE & WINDSOR BLVD., Los Angeles. Cliff Spindel, ext. 518, 519, HO 5-8023. 15

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

FURNITURE, early American, dining w/ hutch, living rm., bedroom twins, prices various, redwood patio furn., 9-pcs., $125.; bar, $40; all hi-grade, individual or lot. OR 1-0536. A

BICYCLE, boy's, 26" Excelsor 3-spd., racing-type, $20; lawnmower, Penn., Jr., $10. PL 5-4497. A

HILLMAN, 1959, black, 4-dr. sedan, 14,500 miles, $850. OR 4-7800. A

LITE FIXTURES, 27", rustic, crossed oxen yokes w/hurricane lamps in ea. loop, $15. GE 1-4233. A

PONTIAC, 1949. 2-dr. sedan, R/H, stnd. shift, good trans., 1961 tab, $125. DA 9-4286. A

ENGLISH FORD, ZEPHYR, 1953, $225. AX 2-0034. A

TRUCK, 1934, Ford pickup, $100. OS 9-2433. A

SOFA, modern style, 6½', cost $150, $35; freight train, Lionel, electric, cost $80, $25; 30 novels & books, cost $100, $30; 3 lamps, cost $15, $5. GR 8-4630.

TWIN BED, $25. OS 5-5453. A

HOUSEHOLD FURNISHINGS, refrigerator, Frigidaire, $35, sink & dishwasher comb., GE disp., $25, range, Western-Holly, dbl. oven, $30, kitchen table, drop-leaf type, & 4 chairs, $20. FA 8-0482. A

STAUFFER TABLE, w/attach., $150. OS 6-2162. A

METRONOME, cost $14, $7. DA 9-2734.

FREEZER, upright, 12 cu. ft., 1½-yrs.-old, $300. OS 6-3148. A

BICYCLE, Schwinn, 26", racer-type w/all accessories, $15. OR 7-8775. A

MERCURY, 1953, Monterey, hd. top, blue & white, $250. OR 4-3852. A

PING PONG TABLE, set, $17.50; bicycle, boy's, 26". $22. FA 8-5958. A

KAISER-FRAZER, 1947, very good trans. car. $99.95. Box 602. A

HOUSEHOLD FURNISHINGS, living room set, bamboo, $125; end tables, $5 ea.; ping pong table, $20; 3 formals, size 10 & 12, $5. ea.; lounge chair, $10. OR 0-1143. A

MOVIE CAMERA, 8-mm, Brownie, $19; power mower, $39; bicycle, boy's, 24", J. C. Higgins, $22. Box 601. A

SIMCA DELUX, 1959, R/H, 30 mpg, $800. AX 4-1708. A

TV, 17", portable, $50; vacuum cleaner, Cadillac, upright, $7.50; lite fixture, 8' 4-tube flourescent-type, $12.50, DA 6-1572. A

TYPEWRITER, Smith-Corona, electric, portable, lite blue, w/case, $125. PL 4-6146.

LAWNMOWER, 17", 6-blade, $7.50. PL 4-9637. A

TIRES, Dunlop, 5, 5.50x15, w/tubes, $10. OR 1-6091. A

ACCORDION, 120 bass, switch, small size, $100. PL 8-0374 Call 10 AM-2 PM.

CADILLAC, 1951, 4-dr., good mech. & body cond., $250. OS 5-2591. A

REFRIGERATOR, Westinghouse, $30. FR 9-4740. A

New Class For Square Dance Club

Spring classes for NRC Square Dance Club beginners are due to get under way next Monday, February 20, it is announced by Commissioner Dick Rinehart.

Dances will be held at the Henry Clay Jr. High School auditorium, Western Avenue and 124th Street.

Time—7:30 to 10:30 p.m.

Classes will continue for 16 weeks.

Meanwhile, Friday, February 17, is graduation night for the fall class. Big celebration, says Dick. Starts at 8:30. Ralph Hill is the caller.

Bring the entire family.

NRC TRAINMEN INVITE DADS TO BRING SONS

An outstanding hit under any Christmas tree is a toy train.

This prompts Jack Wilson, NRC Model Railroad Club commissioner to inform all Norcrafters that on Thursday evening, NRC Clubhouse, 7:30 p.m., model railroaders hold forth.

Norcrafter dads are asked to bring their sons to join in this fascinating and nostalgic hobby. Just a view of the Club tracks in operation is an evening of entertainment.

NRC Railroad Club invitation is open to all.

FOR SALE

BICYCLE, boy's, touring-type, new tires, $15. DA 3-8685. A

OLDS, 88, 1956, 4-dr. sedan, R/H, Hydramatic, W/W, orig. owner, $625 OR 7-4579. A

CAMPER, 1959 Chev., fleetside, 8' box, $200; golf irons, matched set, w/cart, $25; cabin, on 2½ acres, Lake Henshaw area, $5000; boat, 14' mog., glassed seams, windshield & steer. wheel, $125 Box 604. A

WANTED TO BUY

BOX SPRINGS, 2, twin bed size, PL 7-5915. B

WELDING EQUIPMENT, tanks, hose & torches, prefer aircraft type. FR 4-2915.

TANDEM BICYCLE, 3-speed. FR 6-2136.

FOR TRADE

FREEZER, 1960, Marquette, 17', completely stocked w/ ½ beef, vegs., juices, etc., trade for boat, motor & trailer of comparable value. Box 603. C

RENTALS OFFERED

APT., 1-bdrm., unfurn., water & trash pickup paid, paved parking area, yard, patio, duplex, $65 mo. OS 9-5153. E

APT., 2-bdrm., garage, carpeting & drapes, beautiful view, $125 mo.; house, 3-bdrm., garage, carpet & drapes, $115 mo. DA 6-8231. E

APT., 1-bdrm. near Alondra Park, Lawndale, garbage disp., fenced yard, child OK, water & trash paid, $65 mo. OS 5-6285. E

APT., 2-bdrm., unfurn., $95. OS 5-8493.

UNFURNISHED extra large, two bedroom, across from new Thriftimart & Hawthorne Hi-school. 1 or 2 children O.K. Real clean. $85. DA 9-0314. A

RENTALS WANTED

GARAGE for boat storage. DA 3-7363. F

HOUSE, 1 or 2 bdrm., furn. or unfurn., w/strong, high fenced yard for dog. $35-$90 mo. OS 9-3413. F

PERSONALS

WE WISH to extend sincere thanks & appreciation for expressions of sympathy during the loss of our loving mother. MR. & MRS. JACK F. LEBLO & FAMILY. L

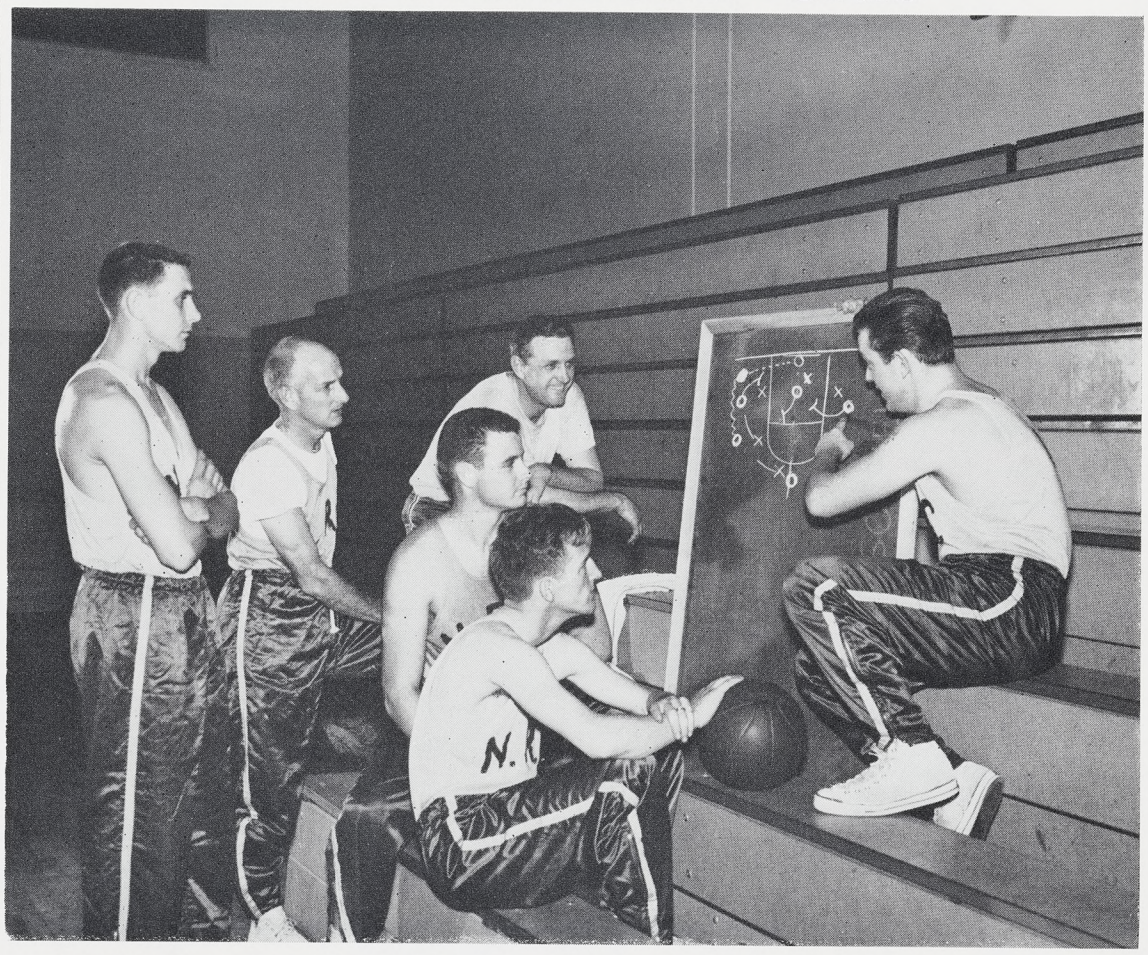
FOR SALE OR TRADE

BEDS, 7' foam rubber mattress, w/headboards & frames, cost $137.50 ea., $125 for both or trade for good record player. OS 9-4761. M

SOUND PROJECTOR, 16mm, 2 pc., Victor Animotograph, 950W, $95 or trade for silent 16mm projector, 750W. FR 5-0122. M

NRC Vignette #2

NRC Basketball Club



CASABA CHALKTALK—The NRC Basketball Club is one of the oldest organizations on Club rolls. It provides a favorite sport outlet for Norcrafters from all departments. Commissioner Bill Greene with the help of Personnel Activities, provides courts, lists of players, playing schedules, placement of players looking for a team. Equipment is furnished by the NRC. In photo, 5200's Zephyrs indulge in a little chalktalk prior to a game. They are first round champs and undefeated in the current intra-company league. Six teams are vieing for the title. From left are Dave Welty, Curt Harris, Scott Mitchell, Greg Halberg, Don Frost, Bill Greene at blackboard. If basketball is your cup of tea, full information at Personnel Activities.

GEM AND MINERAL FOLK WILL STAGE "RAINBOW OF GEMS"

The second annual show of the Northrop Recreation Gem & Mineral Club will be presented at the Northrop Recreation Clubhouse in Hawthorne on Saturday and Sunday, February 25, 26, it is announced by Bill Puniwai and Doyle Shook, day and night commissioners, respectively.

The show, called "Rainbow of Gems," will feature the display of hundreds of precious and semi-precious gems and minerals from the collections of eight guest exhibitors and four dealer (commercial) exhibitors. Exhibitors are traveling many miles to partake in this gigantic show.

Also featured will be working demonstrations of various techniques and methods of gem cutting and finishing including faceting, grinding, sawing, silver work and tumbling.

Additional attractions consist of displays of figurines, crystals, jewelry, pictures of polished wonderstone and an array of other unique materials.

The continuous showing of Walt Disney's 75-minute film of breathtaking loveliness "The Living Desert" will serve to put the frosting on the cake, say Bill and Dave.

The NRC Gem & Mineral Club is one of the more than 40 off-the-job leisure-time activities sponsored by the Norair and Nortronics ES&E divisions of Northrop Corporation at Hawthorne.

"Rainbow of Gems," scheduled for 10 a.m. to 10 p.m. Saturday and 10 a.m. to 6 p.m. Sunday, is open to the public. There is no admission fee. The NRC Clubhouse is located at 175 No. Hawthorne Blvd.

Last year 3000 starry-eyed viewers marched through the doors, 4000 are expected this year. Remember—all are welcome and admission is free.

SECRETARY MAG AT DISCOUNT IN QUANTITY

Northrop secretaries are advised that a discount of 50 cents a year is given to those who order Today's Secretary magazine in groups of five or more. Regular subscription price is $3 a year, or $5 for two years. Group rate is $2.50 and $4, respectively.

Much of the magazine is printed in Gregg.

Subscription orders should be sent to: Today's Secretary, Circulation Department, 330 West 42nd Street, New York 36, New York.

FREE (to be given away)

KITTENS, 2, male & female, have shots. FR 7-2263. D

Boat Club Sets March 4 For "Beachcombers Ball"

Fun is on tap Saturday, March 4 at the "Beachcombers Ball". This gala dance, sponsored by the NRC Boat Club, is an annual affair which seems to improve with age.

Music will be by Leon Guide and his Beachcomby Foursome. Highlighting the festivity will be the presentation of prizes to the guy and gal whose costumes best capture the beachcomby theme. In addition, door prize drawings will be held every hour.

Sandwiches and snacks are included in the price of admission, $1.45 a person. Keg beer is free, courtesy NRC Boat Club. Tickets are on sale in the Personnel Activities offices and wherever there are—Tickets on Sale Here—signs.

Dancing starts at 9 p.m. and continues until 1 a.m.

Location is the NRC Clubhouse Annex.

NRC CAMPERS IN FIRST FOR 1961

First NRC campout of 1961 will take place this weekend, it is announced by Fred Armstrong, commissioner.

Destination is Glen Ivy Hot Springs near Corona, California

Cost is $1 for each camp. Number of persons in a camp is unlimited as camp sites are plentiful.

Glen Ivy boasts swimming pool and tennis courts.

A potluck dinner will be served Saturday evening.

To get to Glen Ivy take Santa Ana Freeway to Riverside Freeway. Riverside Freeway to Corona, south at Corona on Temescal Canyon Road to Glen Ivy.

Cost of pool is 60¢ for children, 75¢ for adults. Be sure and bring a suit, says Fred.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, March 1, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — RAPID CITY, PRESQUE ISLE, EL PASO

NORTHROP-NORAIR

NEWS BRIEFS

FASTER ANALOG SERVICE — The COADAP (COmputing And DAta Processing) Center has improved its analog computing service by the addition of some new electronic multipliers that will provide as many as 24 multiplication products at electronic speeds. These new devices are not only faster than the old servo-multipliers which are now part of the analog computing equipment but they are less subject to the ills that beset electro-mechanical gadgets. They will not only solve engineering problems faster but

(Continued from Page 2)

Norair Scientists Make Study of Lunar Base

What is it like on the moon?

How would it be to live and work there?

Actual firm knowledge of lunar surface conditions is the objective of NASA's series of investigative vehicles among which is "Prospector Project". This will be an unmanned system that will send back data to help science prepare for the eventual step—a manned lunar base.

Norair's Astro Sciences group, N. V. Petersen, chief, is conducting studies in both areas. Work is now underway in anticipation of participation in "Prospector Project". NASA is scheduled to let contracts within the next six months.

SCIENCE VIEW

In addition to "Prospector" preparation, Astro Sciences has also conducted intensive studies in preparation for construction and development of the manned base itself. To give readers a science-eye view of lunar conditions, the Northrop-Norair News presents this concept.

Illustration above, at right, depicts such a base assembled from dual purpose prefabricated components and modules. This material was originally assembled in an earth orbit to form a special purpose lunar payload landing vehicle.

IN FOOTHILLS

The base illustrated is located in Palus Putredinis, approximately midway between Archimedes, Linne, and the Apennine Mountains. The panorama is seen from the "foothills" of the Apennine Mountains.

The base is assembled from prefabricated cylindrical cans which are interconnected by airlock equipped tunnels. The cans and tunnels are located approximately 20 feet underground. An excavation for one of these cans is being carried out by a drag bucket that is powered and controlled from two general purpose vehicles by a cable system.

The use of a drag bucket, rather than dozers, illustrates the reduced effectiveness of traction and the application of simple but effective support equipment.

An unimproved landing area is shown in the background, together with solar energy collectors and communication antennas.

MOON SUITS

The men in the foreground illustrate one type of surface vehicle — the manpowered moon suit. The suit illustrated depicts several controversial features—the articulated joints, the use of gloved hands or special tools, an exterior armor, the vulnerability to cosmic or other radiation, the vulnerability to meteorites. The suit and the nature of the terrain imply considerable difficulties in moving about the surface unaided. At the foot of the hill can be seen a "crawler" which is used to give the moon-suited man additional mobility and range.

Two general purpose vehicles are shown providing the power and control to lower the "life supporting" cylinder into the pit. To the left of the photo, another general purpose vehicle is shown coupled to an airlock on the end of a life support cylinder. On the far side of the pit, one with a crane attachment is depicted loading the cargo vehicle. In the background, to the right, a "train" of these vehicles is shown approaching the base.

The cargo vehicle being loaded is a larger vehicle than the general purpose machine but it utilizes a great many components common to both.

A wheeled vehicle is shown approaching the base from the upper left. The large spoked wheels shown here may be more desirable than the "track laying" type for cross-country transport over a known suitable route.

In the background, at the left, a special purpose lunar payload landing vehicle is shown during the landing phase.

On the surface, to the right of the special purpose payload vehicle that is landing, is a logistics vehicle which may be used to transport personnel, fluids, and equipment by selecting the proper logistics module. It carries its payload between the moon's surface and lunar orbiting space vehicles.

It should be understood that to date, the actual conditions on the moon remain a controversy. Scientific authorities do not agree on many points. These include, presence or lack of water molecules in the rocks; and is the moon made up of volcanic or sedimentary materials? Are lunar craters the result of meteors or of volcanic action?

SAME AS EARTH

Many scholars believe that the material of the moon is the same as that of the earth in texture and origin.

Even moon space conditions, amount of oxygen, radiation, light, and temperatures, have not been proved beyond doubt.

"Prospector Project" in which Norair hopes to take part, and other NASA vehicles such as Ranger and Surveyor, will answer many questions. But enigmas will remain until man first sets his foot there.

Norair's additional study on development and construction of a manned lunar base is in support of this event.

NORAIR'S ASTRO SCIENCES group makes study of construction and development of manned lunar base. Complete range of needs, from earth communications to surface vehicles, is planned. Artist's conception shows base at midpoint of completion. Moon location is in the "foothills" of the Apennine Mountains. (See story adjoining.)

Sal Xifo Made Norair ETO Representative

Salvatore Xifo has been appointed European engineering representative for Norair Division and has established offices in Paris, France, at the Northrop - International headquarters, 12 Avenue Hoche.

In his new capacity, Mr. Xifo is responsible for technical liaison and support of all Northrop-Norair programs in the European area.

Cockpit "White Light" A First in T-38 Talons

"White light" illumination for cockpit instruments is being put to its first operational use in the T-38A Talon supersonic trainer, the Air Force has announced.

Use of this filtered white light system in aircraft cockpits will enable pilots flying at night to distinguish color on instruments and maps. The system uses a blue filter to make what appears to be "white" light truly white.

In the present red-illuminated cockpits with light diffused on instruments through a red filter —similar to that of an automobile taillight—only red and black markings can be seen. White light insures pilots a more accurate visual perception.

Red light has been used because it supposedly required less time for a pilot's eyes to adapt to night vision. However, human factors engineers have since learned there is no appreciable difference in adaptation time between low intensity red light and low intensity white light, and the latter provides the advantage of color detection.

Cooperation between the Air Force and Norair engineers produced the T-38 white-lighted cockpit design.

Corporation Earnings Up For Half Year

Northrop Corporation's earnings increased 34 per cent in the first six months of the Company's current fiscal year, Thomas V. Jones, president, has announced.

Northrop earnings were $4,227,000 in the six months ended January 31, 1961, as compared with $3,115,000 in the same period a year ago. This is

(Continued on Page 2)

President Jones Will Do Honors at Testing Luncheon

Northrop President Thomas V. Jones will have the honor of introducing Major General Thomas P. Gerrity, commander, Ballistic Missile Center, who will be principal speaker for the March 21 luncheon at the convention of the Society for Nondestructive Testing to be held at the Ambassador Hotel.

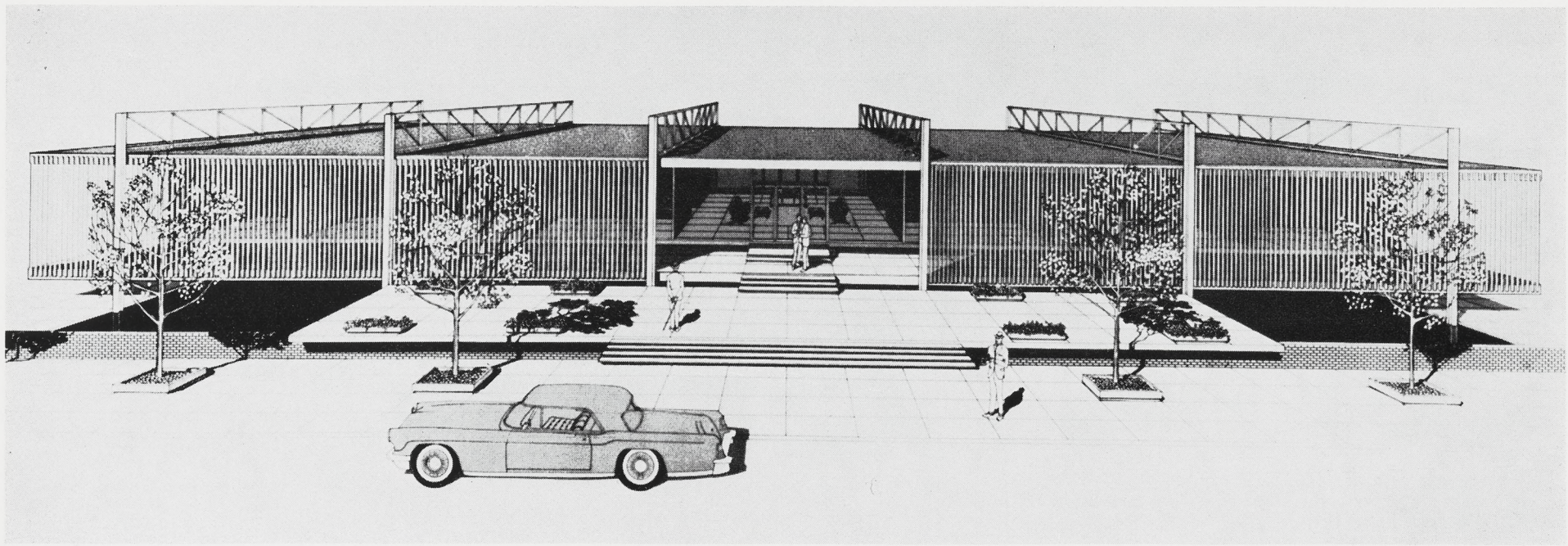
Norcrafter Dan O'Halloran, chief, Quality Control, is co-chairman of the convention.

General Gerrity will speak on "USAF Ballistic Missile Site Activation Program".

General James A. Doolittle, USAF (retired) and chairman of the board of directors, STL, will be master of ceremonies.

The meeting will be for five days, March 20-24.

Over 500 western industrial leaders are expected to attend,



ACME—The world's first all-aluminum office building will be constructed for the Acme Metal Molding Co. Craig Ellwood Associates, architects, depict above how this unique building will appear when completed.

NEWS BRIEFS

(Continued from Page 1)

will make it possible to solve problems extending into more critical regions than could ever be handled before.

WEATHER PLANE RETURNS—A sudden rise in temperature at Malmstrom AFB, Montana, has led to delay or possible cancellation of T-38 cold weather tests. The T-38 all-weather test aircraft returned from Malmstrom Feb. 10.

ASTRONAUTICAL SOCIETY—Norm Petersen, chief, Norair Astro Sciences group, accepted on behalf of Northrop Corporation, a Certificate of Corporate Membership in the American Astronautical Society at Dallas, Texas, last week. Corporate membership in the AAS consists of 20 top-ranking American aerospace firms. Mr. Petersen served as chairman for the AAS luncheon meeting featuring Mr. Harold Finger, manager, AEC-NASA, Nuclear Propulsion office, speaking on "Advanced Propulsion Systems."

T-38 BUY NEGOTIATIONS—Al Morgan, vice-president, Contracts and Service, reports that reset negotiations with the Air Force have been completed for firm target price on the T-38 fiscal year 1960 buy—50 airplanes. Deliveries on this order will begin in March of this year and continue through November . . . Initial target price for the 144 T-38 airplanes for the fiscal year 1961 buy has also been negotiated. Deliveries on this order will start in December of this year and continue through November, 1962 . . . Negotiations for the 1962 fiscal year buy, airplanes to be delivered during calendar year 1963, will get under way within the next few months. Air Force budget funds for this order have already been earmarked. (See Norair News, 1 February, 1961) . . . Mr. Morgan also advised that the Air Force has requested planning cost figures for the 1963 fiscal year buy. Airplane deliveries in this order are scheduled for calendar year 1964. "T-38 planning continues well beyond the 1963 deliveries," stated Mr. Morgan. "In fact, for several years." . . . Team that conducted Wright-Patterson 1960 and 1961 negotiations was headed by Mr. Morgan. Assisting him were Gid Kelley and Harold Knopp, Contract Pricing; Jack Beatty, Contract Administration; and Hugh Watson, Finance Department.

AIR RESTARTS—In a recent test flight at Edwards AFB, an Air Force pilot restarted T-38 YJ-85 engines 40 times in succession from the aircraft battery. Only three battery restarts are guaranteed. In the test flight, both engines were started off the battery prior to take-off. With the generator on, the T-38 climbed to 20,000 feet, after which the generator was turned off for five minutes. The 40 battery restarts followed, one engine at a time. A slight drop in battery voltage was promptly restored by the generator. An Air Force evaluation: "Excellent—more than expected for emergency purposes."

Communications—Newest Air Force Major Command

AFNS—The Air Force will add another major air command to its roll of 18 with the establishment on July 1 of the Air Force Communications Service (AFCS), with headquarters at Scott AFB, Ill.

This announcement was made by Air Force Chief of Staff General Thomas D. White in a January 30 address before the 71st annual Chamber of Commerce dinner, Montgomery, Alabama.

Creation of the command followed several years of study aimed at securing reliable, adequate, secure and instantaneous communications. It is considered a vital necessity in an age of ICBMs which have shaved warning time to 15-30 minutes, General White said in his address.

The new command will assume responsibility for operating Air Force telecommunications point-to-point and air-to-ground on a global basis, as well as terminal and on-route navigational aids.

Nortronics Announces Addition

Formation of a new Marine Equipment Department by Northrop Corporation's Nortronics Division has been announced by Thomas V. Jones, Northrop president.

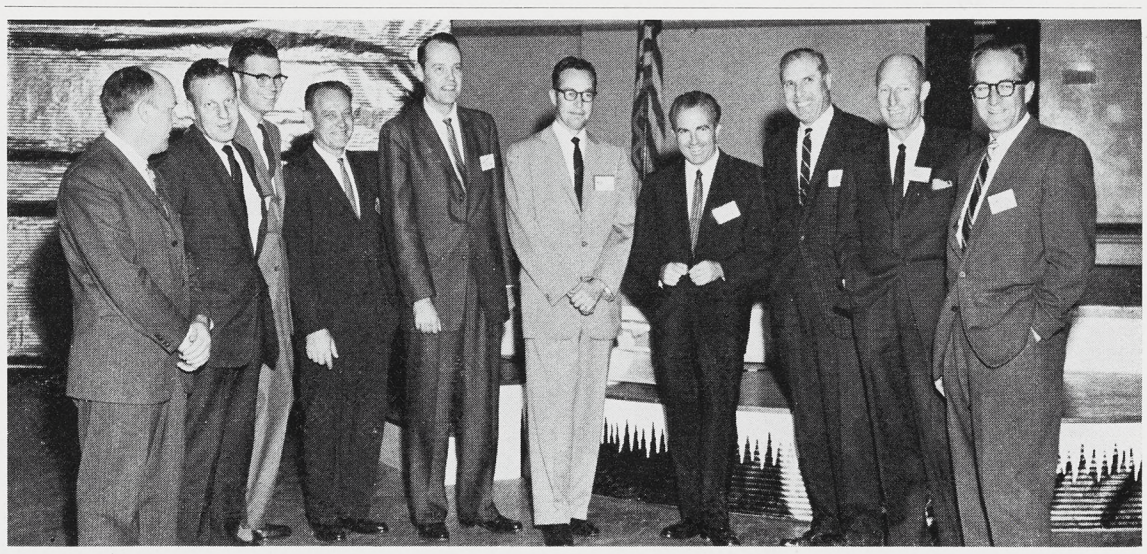
The new department will carry out Northrop's growing research, development and production activities for periscopes, radiometric sextants, stabilization computers and maritime navigation plotting equipment.

Nucleus of the new unit is being drawn from Nortronics Precision Products Department, Norwood, Massachusetts. Leo M. Chattler has been appointed vice-president and manager of the new department which also will operate in Norwood.

Northrop holds current U.S. Navy contracts for the Type-11 periscope drive system and the radiometric sextant designed for Polaris Fleet Ballistic Missile nuclear submarines.

Dr. Krebsbach Honored

COMMUNITY SERVICE—Dr. Richard J. Krebsbach, chief, Norair Medical group, left, receives special community service plaque from Hawthorne Junior Chamber of Commerce for helping bring polio clinic to this city during September and October last year. Award was made by Harry Carroll, Jaycee polio clinic chairman at the Junior Chamber annual awards banquet. Plaque was inscribed, " . . . In recognition and appreciation for outstanding community service through participation in the Hawthorne polio clinic." During clinics, nurses administered Salk vaccine to over 3000 persons. Norair provided clinic quarters in Recreation Club. Nortronics provided clerical staff.



SOCIAL-EDUCATIONAL—Quality Control department holds regular social-educational session wherein briefings on topics of high Division import are discussed. This time Q-C people invited key men on Laminar Flow Control for particulars on that project. From left, Ole Omley, director, LFC Manufacturing; Warren Klauer, chief, LFC Structures; Don Warner, director, LFC Engineering; Earl Nickles, superintendent, LFC Fabrication and Assembly; Sherwood Brown, project engineer, Advanced Manned Aircraft Systems; Milt Kuska, manager, LFC Technological Airplane Project department; Jack Mannion, assistant to the Corporate vice-president and Norair general manager; Bob Catlin, manager, Quality Control; Jack Young, director, LFC Quality Control; Jim Quick, chief, Manufacturing Engineering. Mr. Brown made LFC presentation.

Earnings

(Continued from Page 1)

equivalent to $2.20 a share on 1,918,854 shares outstanding at January 31, 1961, as compared with $1.71 a share on the 1,827,086 shares outstanding on January 31, 1960.

Mr. Jones pointed out that the six months earnings included $480,000 of nonrecurring income resulting from payments for "transfer of know-how" for equipment being manufactured overseas.

Six months sales totalled $130,385,000 compared with $110,491,000 a year earlier. Backlog at the midyear stood at $276,654,000 as compared with $221,775,000 at the previous midyear.

A quarterly dividend of 40 cents a share has been declared.

Northrop-Norair News

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NORAIR DIVISION

CHARLES BRADFORD, Editor

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Test Pilot's Test Pilot, That's Major Jim Anthony

All good men work. Some work quietly.

Such a good quiet man is Major Anthony, T-38 project officer. He also serves as acting Air Force plant representative should the colonel be out of the plant.

It wasn't his idea that he be interviewed by Aireporter. Fact, it took some drawing out plus research in other quarters. His daughter Sally's scrapbook. His colleagues and counterparts in flight test. Self-acclaim is not Major Anthony's MO, neither on

TEXAS TEST PILOT

the other hand is introspection. He is not a complicated man, unless a penchant for hard work and job enthusiasm could be considered a fixation. But he is a dedicated man. The Air Force is his way of life. Has been for 19 years ever since he joined up with the Army Air Corps from his hometown, Montebello, California. He had just earned his commercial license at Vail Field. The war has heating up. Pilots were precious as gold.

His first orders following his commission were prophetic.

He was assigned to test aircraft at the overhaul depot in Big Springs, Texas. He has been a test pilot ever since.

Major Anthony "thinks" that,

KOREA—EIGHT HITS

in his years of "wringing them out," he might have set a record or two, but he is very reluctant to go beyond.

"The Air Force is full of good men," he states. "I have put in a lot of hours and flown a lot of airplanes. So have hundreds of other pilots. It's our job. But I'll admit it's more than just a job. It's like managing a business. As with a business, you must understand your airplane completely. Go out on the assembly line and watch them build it. Study the rivet patterns, the castings. Learn the blueprints by the numbers. Learn the rigging."

Major Anthony knows what he is talking about. He says, "If you ever let the airplane surprise you, it will probably be too late."

He is known in the Air Force as the man who has never lost a ship.

He once landed an airplane at Hill AFB by gunsight approach. His controls were out. He made a 35-mile approach across the Wasatch Mountains, gaining and losing altitude by throttle action alone. Another time and another test, he landed on the wing tanks, wheels up, due to a warning light malfunction.

"This was the nearest thing to a surprise," said Major Anthony. "Just before I touched the

By Aireporter

tanks, the tower said, 'Don't look now, sir, but your wheels are up.'"

Major Anthony's reaction was to pour on the coal and try for a take-off using the wing tanks as dry land skis. "But I couldn't rock her back to get the right attitude," he said. "I had a fire and I was running out of runway pretty fast. There was a cliff ahead. I dumped the flaps. We jumped practically straight up. The airplane and I. I gave her plenty of elevator at just the right time and got airborne."

The fire went out and Major Anthony pumped the gear down for a happy landing. The tanks suffered the only damage and they were expendable.

But test piloting is not in itself a dangerous vocation. "The pilot builds in his own danger if it exists," stated Major Anthony.

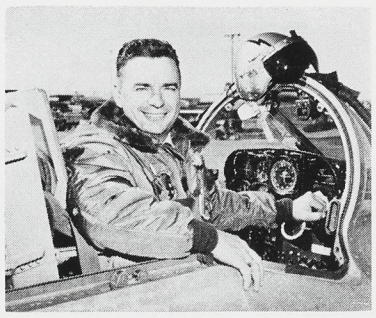
"You must practice and constantly," he continued. "It's like a sport. You can't keep up the pace without practice. Personally, I never make a normal landing if I can help it. Crosswind, downwind, sideslips, poor visibility, high, low, dead stick. If you do this, then you know how to when you have to."

Norair can claim a large share of Major Anthony's Air Force years. He has over 1000 flight test hours in the Scorpion F-89 at Hill Air Force Base and as AF acceptance officer at Palmdale. He has a Norair plaque attesting to this feat.

He has test flown 83 different airplanes, from puddle jumping liaison ships to 4-engine heavies. Incidentally, while at Hill as executive officer to the director of maintenance depot, he found time to take a hand in engineering 200-gallon pylon tanks for the F-86F, and to compute a 5-year workload for the base including phase-in of the Bomarc and Minuteman missiles. This forecast is proving to be remarkably accurate.

He served in Korea, Aireporter found out. He was director of Materiel for the 67th Tactical Reconnaissance group. He logged 197 hours of combat flying after duty hours and weekends. He flew an unarmed WB-26 weather reconnaissance airplane, but even so, he got a victory.

He shot down a North Korean aircraft with an M-1 rifle.



1000 HOURS IN THE '89

"He flew over camp at night throwing grenades down on us," he related. "I shot his engine out. Eight hits. He went down in a rice paddy beyond the camp!"

Major Anthony has over 8100 hours total time, 5500 hours of this are test flights. He is an AMC career man having been in this command continuously except for a 36-month tour in SAC.

The Air Force has sent him to aircraft engineering school. On his own, he has accumulated over 96 night school semester hours in management studies at UCLA and schools in Antelope Valley, Weber (Ogden, Utah), University of Utah, and Utah State.

On the subject of the T-38, the Major goes all out.

"My favorite airplane," he says. "I started with her as project officer when it was just a paper job. No production airplanes to fly.

But hardware soon came through. Major Anthony was number 10 man to fly the T-38 and the first in AMC, April 27, 1960, from Palmdale.

"I love to fly but as production builds up, this desk will also build up and there will be less and less flying time for me.

"I particularly love to fly the T-38. Fly most any of today's aircraft and you are just an errand boy serving the automatic equipment in the cockpit. But the T-38——. This is real flying. The airplane is so responsive and yet so sensible. Norair engineers have done a fine job of building in control 'feel.' It's all power, of course, but with the T-38 it is as if you actually have manual control, as if there is no assist between the stick and the slipstream.

"The T-38 will give students this highly important 'personal' knowledge of the piloting art,"

NOW A TALON MAN

Records Management Hands Full Emptying Full House

RECORDS MANAGEMENT — Records Management Norcrafters from left, Leo Richman, chief; and Methods Analysts Van Bogardus, Josephine Thompson, and Harriet Carroll. This small group has big responsibility managing proper disposition of Division records.

Small group, but big results.

This is Records Management, Leo Richman, chief. Four strong, their shop is located on the submezzanine above the Mailroom at Plant One. They are a part of Administrative Services, B. R. Bonnett, director.

Small, yes, but their task is big. As big as Norair. Every piece of paper in the mill eventually is something they have to do something about. Keep it or destroy it.

They are experts at both.

Witness:

To date they, with the help of Maintenance, have tossed out 157 tons of inactive records. This tonnage had occupied 1793 file cabinets. Some money was realized. The files freed were valued at $152.405. the wastepaper brought $2884.

During the same period, Records Management stored 440 tons of records at Norair Records Center. Paper was formerly in the various departments occupying 5028 file cabinets. With storage effected and empty files moved, 35,000 additional square feet were made available for current projects.

And this isn't all—after the records, the group finds time to publish the Correspondence Manual and the Clerks' Manual.

And there is more—they operate Forms Control also.

Records Management Records Center, located at El Segundo and Weber Way, is run by Van Bogardus, methods analyst, and run cheaply, lowest cost in industry in fact—a cubic foot of records stored costs Norair 75 cents a year. Other companies run as high as $6.20 a year.

Records Management at the outset when the program was being installed was an organization of ten.

"We're down to four now," says Leo. "The system is operating very efficiently. Aside from Van and myself, there are Harriet Carroll and Josephine Thompson. Harriet is a 17-year Norcrafter. Josephine has been here nine years."

Leo, incidentally, comes by his records management know-how through a Navy and government background. He was director, Naval Records Management Center, San Bruno, and also was chief, Records Management for Southern California, Arizona and Nevada for the Federal Government.

"We're a very busy group," said Leo. "When you are fighting the relentless accumulation of paper, eternal vigilance must be your watchword."

RICHMAN SPEAKS AT ROUNDTABLE

Leo Richman, chief, Records Management, addressed the Work Simplification Roundtable of Loyola University of Los Angeles, February 28.

The address was entitled, "Records Management at Northrop-Norair". Mr. Richman spoke before the Roundtable for the third consecutive year.

TOM McCARTHY ADDRESSES AMA

Tom McCarthy, director, Master Programs and Analysis, spoke before a group of industry top executives at the American Management Association's Orientation and Workshop seminar in New York.

Topic of Mr. McCarthy's address was "Product Value Management."

he said.

The Anthonys are a fine family of five. The children are Nancy, 18, who wants to be an airline hostess, Gary, 15, who wants to go to the Academy, and Sally, 11, who is getting straight A's in school.

"What do we do for relaxation? We charter an airplane big enough for the whole family and fly someplace. We all take turns flying it. Even Sally. It's a lot of fun. I guess it's the most fun. We have other relaxations. We have a vacation trailer and a sailboat—and the family likes to fish."

Aireporter asked, "If you were to start out again. Like back in '42. The Air Force? Being a test pilot? Your career in the AMC?"

"Yes," he said. "I want every hour of it. I am a happy man."

This became a tribute. Double, and of the highest order.

The Air Force produces our Major Jim Anthonys, and they, very fittingly produce it.

RIDES WANTED

7:30 a.m. — 4:15 p.m.

NICHOLAS & ORANGETHORPE, Fullerton. W. M. Bryan, ext. 1956, TR 1-3112.

SAN BERNARDINO FWY. & AZUSA AVE., Glendora. Miles Thompson, ext. 707, 708, ED 5-9360. 3

8 a.m. — 4:45 p.m.

8TH AVE. & 76TH ST., Los Angeles. J. G. Pelka, ext. 2024, PL 1-8549. 5

WILSHIRE & 26TH., Santa Monica. Mary H. Ashley, ext. 1487, EX 4-6873. 5

RINDGE & CARNEGIE, Redondo Beach. Doris H. Morrison, ext. 2451, FR 2-1402.

DEL AMO & DOWNEY, Lakewood. Henry F. Click, ext. 1401, HA 9-8713. 5

CARSON & CHERRY AVE., Long Beach. R. Barbara, ext. 2123, GA 7-9534. 5

WILSHIRE BLVD. & 14TH, Santa Monica. Kenneth R. Braschi, ext. 646, EX 4-7344.

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DEL AMO & DOWNEY, Lakewood. Henry F. Click, ext. 1401, HA 9-8713. 15

WILSHIRE BLVD. & 14TH, Santa Monica. Kenneth R. Braschi, ext. 646, EX 4-7344.

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

TURNTABLE, 4-speed, studio-type w/16" arm, diamond stylus, magnetic cartridge, on finished base, cost $140, $60. FR 9-5690. A

PUPS, AKC, basset, $75. ED 5-9360. A

FRENCH POODLES, min. size, AKC, $75; load levelers, '59 Ford, $15. DA 5-1709.

HOUSEHOLD FURNISHINGS, 2-pc. sectional, corner table, 2 end tables, coffee table, round, natural lite finish w/ glass tops, TV chair, $25. OS 6-6821. A

HOUSEHOLD FURNISHINGS, dining room set, 6 chairs & buffet, $20; box springs & mattress, 1-yr-old, $50. FR 1-1308. A

OUTBOARD MOTOR, Scott 7½ hp, full gear shift, remote fuel tank, bailomatic, $210. DU 4-4017. A

HEALTH CHAIR, 1960 model, wizard recliner-type, vibrates, oscillates, & heats, $275. LU 5-5939. A

TIRE SKID CHAINS, 5, 6.00x16, $12.50; tractor, 1 plow, hydraulic lift, power takeoff, 6' side mounted mower, field cultivator, scraper, disc, mounted plow, wheel wts., $950. TE 3-3968. A

POWER MOWER, deluxe, $45; TV table, swivel-type, natural, $5; roll-a-way bed, 3-position, $5; bookcase headboard, maple. $10. OS 6-1404. A

STATION WAGON, 1957, Ford country sedan, Fordomatic, r&h, w/w, pwr. steer. & brakes, T-Bird spl., $1095. TO 7-0593.

RIFLE, Savage, Model 99, .300 cal., $75. FR 1-4020. A

DRESS, size 10, cocktail-style, pink chiffon, cost $25., $15. DA 4-8663. A

REFRIGERATOR, Servel, gas, 8 cu. ft., $50.; stove, Chambers, gas, $150. FR 5-3646. A

HOT WATER HEATER, 30 gal., General Captain; also dwr. slides, aircraft-type, both for $15. FR 8-3990. A

ENCYCLOPEDIA, 1956 edition, Britannica Jr., 15 vol., $125; accordion, Universal, 120 bass, $150. PL 5-0334. A

BOW, West Sidewinder, 36 lbs., laminated glass recurve, $20. EX 7-0667. A

FIAT 600, 1959, dk. blue, 19,000 mi., $450. ST 4-9829. A

REFRIGERATOR, International Harvester, 8.4 cu. ft., 42 lb. freezer, $60; stove, Welbilt, gas, $15. DA 3-0979. A

HOUSE, 3-bdrm., fenced yard, w/w carpet & drapes, $18,000. DA 4-7373. A

DINING ROOM SET, 7-pc., solid walnut, hand-carved, $50. PL 6-4978. A

STOVE, Magic Chef, $25. OR 0-3713. A

RUG, 8'x10' oval, muted brown, braided, suitable for maple, $25. FR 9-0395.

CHEVROLET, 1955, sedan, r&h, Powerglide. $495. OL 4-6906. A

EDGER & TRIMMER, Lindell, Briggs & Stratton, 4-cy. eng., 2 hp, recoil starter, $45. OR 7-2037. A

FOR SALE

CRIB, birch, w/spring, $10. OR 7-6919.

CHEVROLET, SPT. COUPE, 1947, new seat covers, 1961 license, good tires, brakes, $55. HA 5-8154. A

BUNK BEDS, maple, springs, quilted bedspreads w/matching canopy curtains, $50. SP 2-1902. A

ROLLER SKATES, men's, short top, black boot, size 8½A, Jerry Nista loose wheels, new toe stops, lge. carrying case, $17. TE 1-3045. A

CAMERA, Argus C-3, w/case & flash, $35; telephoto lens w/case for Argus C-3. $30. Box 701. A

HEDGE TRIMMER, electric, cost $45, $25; ironer, Horton, portable, $25. OS 6-8842.

CAMERA, 35-mm, Canon, f/3.5 Nikkor lens, coupled range finder, $45. GE 1-4233. A

FREEZER CHEST, 21 cu. ft., cost $600; $300. HA 1-5798. A

BABY EQUIPMENT, bassinet, pad, bathinette & hi-chair, $25; chest, blonde, 5-dwr., $25; crib, chest, 4-dwr. & chiffo-robe, maple, w/mattress, Whitney, $100. OR 2-2370. A

VOLT-OHM-AMMETER, Eico, model 536, $12; safety razor, English Rolls, $10; air compressor, Craftsman w/spray gun, $25. FR 5-8278. A

RADIO-PHONO, Zenith, comb., $7; record rack & table, $5; TV or hi fi stand, swivel-type, $10; coffee table, pink & blue tile, black trim, 2'x6', $35. OS 9-6324. A

FORD PICKUP, 1935, w/2 extra front fenders, Mercury head racing engine, 1940, & manifold w/1939 Ford gearbox, rear end & hydraulic brakes, $175; motorcycle, 1947, Harley Davidson, w/ 1955 Harley Davidson frame & hydro-glyde forks, 7 tires & wheels, $225. OS 6-1037. A

CAMERA, Kodak Duraflex II w/Kodak lens, flash holder & leather case, $10. FR 1-2679. A

PONTIAC, 1955, 4-dr. sedan, new tires, brakes, battery, Hydramatic, r/h. $525. OS 6-4492. A

WANTED TO BUY

ENGINE, '53 or '54 Cad., or '55 or later Olds. PL 4-4384. B

GOLF CLUBS, PL 4-3458. B

WASHER, automatic, must be in good condition. PL 8-6890. B

POWER LAWNMOWER, reel-type. FR 7-3549. B

FOR TRADE

OLD COINS, AX 2-4958. C

RENTALS OFFERED

APT., 1-bdrm., unfurn., disposals, $70 mo. & up. OS 5-9695. E

APT., bachelor, modern, furn., near Manhattan Beach civic center, walking distance to beach, stores, pier, $65 mo. FR 4-3365. E

RENTALS WANTED

HOUSE, 2-bdrm., unfurn., fireplace, fenced yard, double garage. FR 9-1589.

PERSONALS

SEWING & ALTERATIONS, very reasonable, work guaranteed. FR 9-6337. L

FLYING CLUB openings available, Cessna 140, 170 & Bonanza at Hawthorne, from $4 per hr., wet. GL 4-7770. L

THANK YOU for use of Norair Blood Bank, cards, & plant sent me during my recent illness. JOHN G. HOFFACKER. L

NRC at Rapid City

RAPID CITY AND THE NRC—Rapid City Norcrafters and friends attended Valentine Sweetheart Ball presented by the NRC at the NCO Clubhouse, Ellsworth AFB, it is reported by Virg Maniago. Judene Grage, secretary, C1801, was voted Sweetheart of Norair T-2 site. Max Fayrweather, site manager, presented Judene with a dozen red roses as she was officially named.

Travel Club Plans Two Vacation Supers in '61

The NRC Travel Club announces two bargain vacation trips this year for Norcrafters.

A two-week jet vacation to the Hawaiian Islands for less than $400!

A 23-day all inclusive vacation to Europe for less than $900!

Details of the two trips will be the subject of a Travel Club meeting at the NRC Clubhouse, March 9, 7:30 p.m.

At the meeting, to help Travel Club members make up their minds, at least on the Island go, Kim Tours and Travel will bring to the meeting a group of Hawaiian entertainers directly from the Islands, which group will bear an invitation for Norcrafters to come and visit next June.

They will back up the invitation with dances, songs, charms, and hospitality that will be waiting for Norcrafters when they arrive.

Those attending the meeting are asked to wear Aloha shirts. Muumuus for the ladies are in order.

SURF FISHERS TO SEE MOVIE NEXT MEETING

The Surf Fishing Club, that hearty group of Norcrafters who stand in the sand, are staging a top program for their up-coming meeting, March 7, 7:30 p.m., at the NRC Clubhouse Annex.

A. B. Callow, eminent sportsman, will show 60 minutes of movies of particular satisfaction and interest to all outdoors men.

Surf Fishing Club members, their families, and friends are cordially invited to attend, states John Pawlicki, commissioner.

BEACHCOMBERS

Don't forget the Beachcomber's Ball.

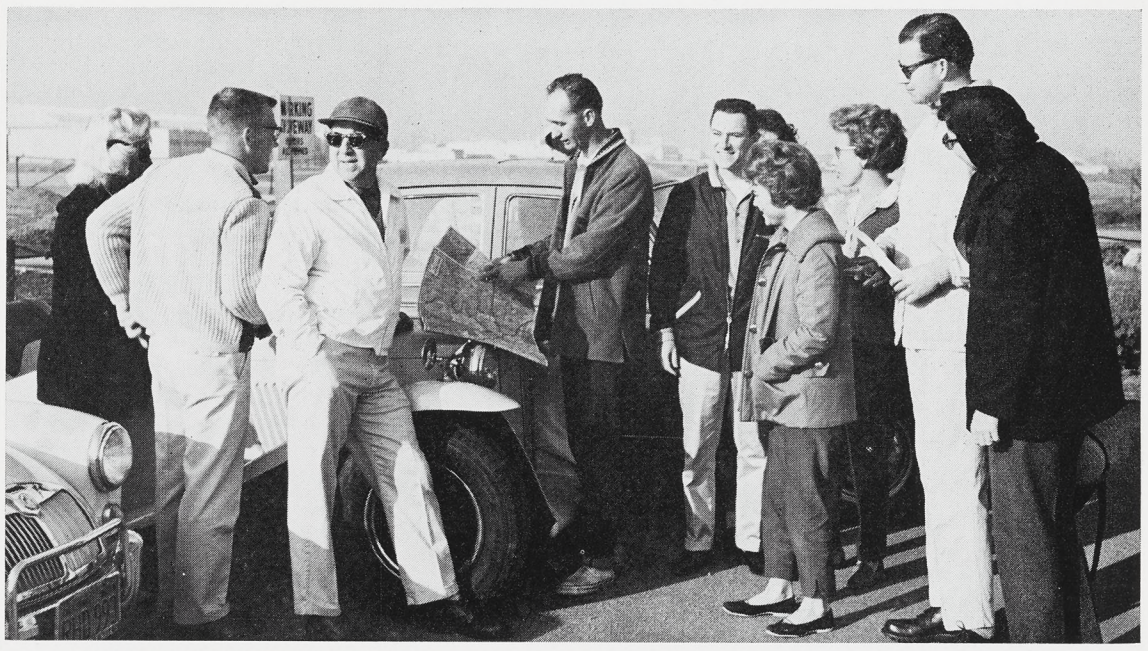
Date is Saturday, March 4 at the NRC Clubhouse Annex.

Dress like a beachcomber.

Last minute tickets sold at the door.

NRC Vignette #3

The NRC Sports Car Club



THE NRC SPORTS CAR CLUB is one of the most active organizations in the Good Time Table. Their events range far and wide over Southern California. Rallyes, treasure hunts, chalk problems, navigation seminars, slaloms are part of the Club's typical weekends. This photo, taken at 7:30 a.m. from Parking Lot H at 120th Street, shows Club members with their trusty sports cars about to embark on a test of drivesmanship. Member Hal Hunsberger, center, checks trip route map. In photo, ready and anxious to go, from left, Beth Hunsberger, Chuck Lamoreoux, Lou Perry, Norair alternate commissioner, (Karl McCready, Nortronics, is commissioner), Hal, Al and Donna Rosenheck, Ann Sparks, Vee Hugill, Dick and Carol Green. Sports car ownership is not an absolute requisite to membership but it helps. Vehicles must for certain have safe handling characteristics. For particulars about joining and jaunting, check with Personnel Activities.

NRC Good Time Table for March

For enrollment or information on activities listed below, call or contact Personnel Activities, Plant One, extension 2784. All clubs meet at the NRC Clubhouse unless otherwise noted.

BALLROOM DANCE CLASS, Wes Williams
Thursdays, 8:15-10 p.m. Newcomers welcome.

BIBLE STUDY, C. J. McGuire
Plant I—Daily, 11:30-12:15, Tool Design Bldg., 11-11:45, 5566 Conf. Room.
Plant II—Mondays & Thursdays, 12-12:45, Conf. Room 2.
Eng. Center—Daily 12-12:45, Reliability Conf. Room.

BOAT CLUB, Sandy Friedfeld
Beachcombers Ball, March 4, 9 p.m.-1 a.m. Tickets $1.45.

BOWLING (days), Earl Saunders
Summer leagues forming.

BOWLING (nights)
Summer leagues forming.

BOY SCOUTS
Sea Scouts meet Tuesdays, 7:30 p.m.
Cub Scouts meet 4th Friday, 7:30 p.m.
Boy Scouts meet Thursdays, 7:30 p.m.

CAMERA CLUB (days), Howard Butler
Meet 1st & 3rd Wednesdays, 7:30 p.m.

CAMPING CLUB, Fred Armstrong
Meet 1st Wednesday, 7:30 p.m.

GEM & MINERAL CLUB (days) Bill Puniwai
Meets 2nd Wednesday, 8 p.m.

GEM & MINERAL (nights), Doyle Shook
Meeting place varies.
Meet 1st Wednesday, 1 p.m.

GOLF, Bill Putnam
San Clemente, March 12. Cost $3.50. Starts 9 a.m.

MIXED CHORUS, Ron Henderson
Meets Tuesdays, 7:30 p.m. All are welcome.

MODEL RAILROAD, Jack Wilson
Meet in Annex, Thursdays, 7-10 p.m. Visitors welcome.

RADIO CLUB, Paul Serafin
Meet last Thursday, 7:30 p.m. Radio code class meets Tuesdays, Wednesdays, Thursdays, 7:30 p.m. NRC's station is W6VPZ.

RIDING CLUB, Tex Statley

SKEET CLUB, Bob Bagby
Shoots alternating Saturday, March 4, 25 at Rancho Angelus Range, Main & Broadway, 10 a.m.

SKI CLUB, Bernie Shyffer
Meets 2nd Wednesday, 7:30 p.m.

SKINDIVING, Ralph Gonzales
Meet 3rd Tuesday, 7:30 p.m.

SPORTS CAR CLUB, Lou Perry
Meet 2nd Thursday, 7:30 p.m.

SQUARE DANCING, Dick Rinehart
Henry Clay Jr. Hi, 124th & Western, Fridays, 8-11 p.m.

SURF FISHING, John Pawlicki
Meets 1st Tuesday, 7:30 p.m. Special program next meeting.

TENNIS, John Potts
Free instruction Saturday, March 4, 18, 10 a.m., at El Camino Jr. College. Practices every Saturday. Indus. League play alternate Sundays.

TOASTMASTERS 212 (days), Jack Apodaca
Meet at Cockatoo Inn Thursdays, 6:30 p.m.

TOASTMASTERS 1398 (nights), Jay Rayner
Meet at Western Ave. Country Club Thursdays, 12:15 p.m.

TRAVEL CLUB, Howard Cornelius
Meets March 9, 7:30 p.m. Proposed trips, Hawaii in June, Europe in October. Live Hawaiian entertainment.

FOR THE LADIES

BOWLING (nights)
Summer leagues forming.

BOWLING (days), Corinne Davis
Summer leagues forming.

GIRL SCOUTS
Mariners, Tuesday, 7 p.m., Naval Reserve Center, 201 W. 126th St., Hawthorne, ages 13-18. All Norcrafter girls welcome.

KNITTING, Vera de Villiers
Meets Thursday, 7:30 p.m. Free instructions each meeting.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, March 15, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — RAPID CITY, PRESQUE ISLE, EL PASO

NORTHROP-NORAIR

NEWS BRIEFS

TWO 4-DAY WEEKENDS—Norcrafters have two 4-day weekends coming up. Memorial Day and Fourth of July. Early announcement made by Corporate Vice-president and Norair General Manager Dick Nolan, last week, gives plenty of time to make plans, schedule outings, trips, etcetera. To compensate for time off, Norcrafters will work the following Saturdays—3 June and 8 July . . . Labor Day will automatically bring a 3-day weekend. Application of the "floating holiday" has been scheduled for Thanksgiving time—24 November. This will provide an additional 4-day weekend.

PACE—Mr. Nolan has announced that Norair Division has contracted to install PACE program in Convair's San Diego Division. Contract negotiations were concluded last week. Program will consist of training Convair personnel in PACE techniques, installation of the program, auditing results and evaluation of progress. R. M. Wrestler, supervisor, is in charge.

AT RAND—Norair officials were invited to present Manufacturing Department's techniques before the Rand Corporation's Learning Curve Symposium staged in Santa Monica last week, it has been announced by Bob Lloyd, vice-president, Manufacturing. Symposium audience was composed primarily of high officials from AMC, ARDC, and BMC. Arch Wallen, director, Production Operations; George Schnug, director, Manufacturing Program Planning; D. N. Petersen, director, and R. M. Wrestler, supervisor, PACE section, made presentations. Mr. Wallen and Mr. Schnug discussed Norair methods of learning curve administration, planning, and application. Mr. Petersen and Mr. Wrestler spoke on PACE as a factor in establishing precision standards to learning curve factors.

MATERIALS SYSTEM—Formation of a Materials System program committee in support of Norair Division's product areas and long range plans has been announced by Cor-

(Continued on Page 2)

NORTHROP CREDIT UNION NAMES OFFICERS, PAYS 4½% DIVIDEND

Officers, directors, and committees of the Northrop Credit Union for 1961 have been announced.

Board of directors consists of C. H. Davis, president; J. R. Willson, vice-president; W. T. Gage, secretary-treasurer; R. D. Hampton; Leo Richman; W. D. Schramm; and H. R. Watson.

Supervisory committee is made up of D. R. Anderson, chairman; Don Colt, jr.; and G. E. Cooper. Credit committee consists of F. E. Wolfe, chairman; J. P. Dickey; and L. W. Monger.

The board of directors has also announced a dividend of 4½ per cent to Credit Union depositors for the year ending December 31, 1960.

Credit Union Manager and Secretary-Treasurer Walter T. Gage lists three types of loans available to Norcrafters. These are automobiles, home improvement, and salaried loans.

Credit Union offices are located adjacent to the east clockhouse, Plant One.

CONTRIBUTION OF $1500—was made to the Hawthorne Community Hospital by Northrop Corporation. In photo, Dick Nolan, left, Corporate vice-president and Norair general manager, presents check to William Daniels, hospital administrator. Accepting with Daniels in behalf of the hospital is Dave Stadler, Norair chief, Personnel and vice-president of the hospital's board of directors.

PRODUCT AWARD WINNERS—George Douglas, vice-president, Engineering, center right, congratulates Norcrafters from Airborne Electronic Systems on "Product of the Month Award" from Space/Aeronautics Magazine. Award was granted for Electromagnetic Test Console Model 101. From left, Jerry Adams, specialist; Chuck Savant, chief, Airborne Electronics; John Eckert, specialist; Ken Riley, senior engineer; Mr. Douglas; Bob Jaehnig, senior engineer; Doug Stephens, supervisor, Radio and Radar branch; and Jim Crawford, project engineer, Associated Project Office. For other key Norcrafters on the project see EMI story, Page 2.

"PRODUCT OF THE MONTH" AWARD TO NORAIR FOR EMI CONSOLE MODEL 101

Norair's Electromagnetic Test Console, Model 101, has been awarded the coveted "Product of the Month" award by Space/Aeronautics magazine.

First photos of the EMI Console appeared in the Norair News, November 23.

Model 101 is being used for system compatibility tests on the Navy's Polaris program. Norair EMI know-how and equipment is also being used on the T-38 production program at Palmdale.

The Space/Aeronautics citation read:

"This award is made in recognition of outstanding service performed through the development and manufacture of a product contributing to the advancement of the aerospace industry." Signed, Randolph Hawthorne, editor.

Console 101 stems from Engineering's Radio and Radar System Design organization.

Nolan On Reliability Before ASQC

The American Society for Quality Control will stage Norair night March 28 at the Institute of Aerospace Sciences, 7660 Beverly Boulevard, Los Angeles.

Dick Nolan, Corporate vice-president and Norair general manager, will be the featured speaker for the evening. He will present "Top Management's Philosophy on Quality and Reliability."

Chairman is Bob Catlin, manager, Quality Control.

Spotlight speaker will be E. C. "Bud" Bennett, chief, Quality Engineering, whose topic will be "Quality Control Relationship to Design."

Abstract from Mr. Nolan's address is as follows.

"The Northrop Corporation maintains established policies for obtaining quality and reliability in guided missile and aerospace vehicle manufacture; however, the complexity of modern weapon systems requires that these factors be given increased emphasis. No other single area of improvement will produce such significant dividends in improving the effectiveness of a weapon system.

"Low volume production of modern weapon systems under highly compressed time schedules, presents unique problems of communication between the design and manufacturing elements of the organization. Management must bridge this gap through improved methods of coordinating departmental responsibilities and

(Continued on Page 3)

Radioplane In Target Drone License Pact

An agreement with Nippon Electric Company, under which OQ-19/KD2R-5 type target drones will be produced in Japan exclusively for the Japanese Government it has been announced by M. W. Tuttle, vice-president and general manager of Northrop Corporation's Radioplane Division. The agreement approved by the U.S. Department of State and the Japanese Defense Agency, became effective in November of 1960.

The licensing contract also requires Radioplane to provide production specialists who will assist NEC in planning and organizing assembly facilities and operations.

Nippon Electric Company, primarily a manufacturer of electronic equipment, produces most of the telephone equipment used in Japan as well as radar, communications and electronic equipment.

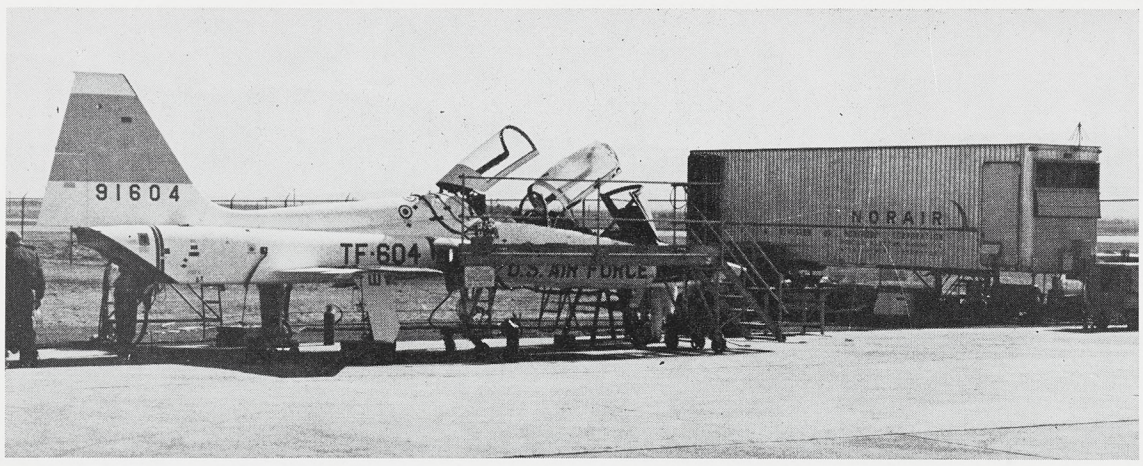
Nortronics Gets More Launchers

Nortronics Division has received a $2,476,839 letter contract for follow-on production of launchers for the U.S. Army Hawk missile.

This award represents the first increment of fiscal 1961 funding for the Hawk launcher. Officials of the Los Angeles Ordnance District indicated that additional funding scheduled under the Northrop production order will bring the amount to $4,953,679.

Now in use by the Army and Marine Corps, Hawk recently displayed new anti-missile talents when it killed the fastest ballistic missile it has ever faced, an Army Corporal missile. The Hawk system has now killed three different surface-to-surface ballistic missiles of the general type that can be expected to be fired against ground forces in battle.

Buy Savings Bonds



EMI MOBILE LAB AT PALMDALE—Radio and Radar's over-the-road electromagnetic interference system van is now at Palmdale making system compatibility tests on the T-38A. Trouble-free operation of the airplane is result. "Noise" elimination know-how stems from Division pioneering experience on the Snark and Scorpion F-89. System was recently used on compatibility tests on Model 101 for Polaris missile at Sunnyvale.

NORAIR RADIO-RADAR TEAM WRITES "BOOK" ON ELECTROMAGNETIC COMPATIBILITY CHECKS

Norair's Electromagnetic Interference team with their new mobile laboratory (see Norair News, November 21, 1960) are running system compatibility tests on the T-38A at Palmdale.

This assignment followed closely that of compatibility tests on the Norair Model 101 Interference Test Console before delivery to Lockheed, Sunnyvale, for use on the Navy Polaris program.

JOBS FOR EMI

System environmental analysis, EMI control planning and r-f interference measurement and surveillance of:

1. Missile and satellite launch sites.
2. Missile and satellite range and tracking stations.
3. Factory test and check-out areas.
4. Fleet gray-out.
5. Antenna sites.
6. EMI radiation damage assessment.
7. Spectrum surveillance.
8. Signature analysis.

Passive detection and simultaneous time-correlated recording and read-out of conducted interference during testing of:

1. Components.
2. Subsystems.
3. Systems.
4. Systems compatibility.

The EMI mobile laboratory was developed by Engineering's Radio and Radar branch, Electromagnetic Interference unit.

Division know-how in electromagnetic interference control was gained on the Snark missile and F-89 Scorpion. The application on the T-38A of a fully instrumented test in accordance with MIL-I-6051B is the first instance in the manned aircraft field. It is expected that trouble-free operation of aircraft electronics made possible by application of Norair's interference control and instrumentation concepts will establish new industry standards of performance.

Suitability of Radio and Radar's EMI lab service which includes the technical know-how, as well as the new equipment, is already in evidence. Discussions and contract negotiations for these services are under way with several west coast aerospace companies.

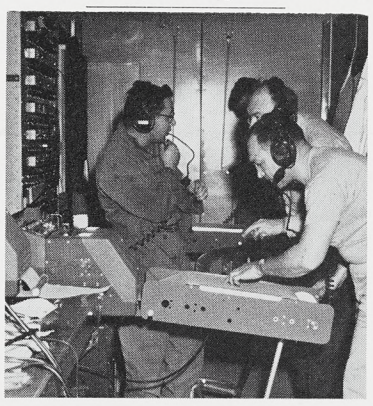
A brief description of the lab:

The entire system is contained within a double-walled, over-the-road type highway van. Actual inside work area is 256 square feet. Extra heavy shielding including new design concepts, provide for compensation of the usual sharp loss of attenuation at the low frequency and microwave ends of the spectrum. Shielding performance of the van exceeds the applicable military specification, MIL-E-4957A (ASG), for example at 14 KC 80 + db and up to 100 db at 10 KMC of magnetic field attenuation is achieved. A distribution system and filtered power is provided for any vehicle under test.

The lab is well lighted and temperature can be controlled from three 2-ton air-conditioners within the van. The lab has its own electrical generator making it completely mobile and independent of commercial power. Connectors are provided for antenna lead-ins and instrumentation for interference measuring equipment. It is equipped with Norair's EMI console for simultaneous monitoring of a maximum of 200 functions. Equipment is included within the van for on-the-spot design and fabrication of prototype filters, detectors, pickups and special instrumentation elements.

The Mobile Interference Laboratory is adaptable for use in radio propagation work such as spectrum surveillance, signature analysis, and refractivity studies. The van can also be used for site cleanup, weapon system compatibility assurance, or any activity involving effects of conducted or radiated electromagnetic energy.

Recent efficiency observations reveal that the laboratory in connection with Model 101 EMI Console is a great time-saver over previous systemized methods. Equipment setup time is reduced from 360 hours to 16; test and recording time from 192 hours to 16 hours.



SHIELDED—EMI Norcrafters make their precision compatibility checks free from interference. They work in double - walled air - conditioned van. From left are Hank Marek, Doug Stephens, superintendent, Radio-Radar; John Eckert, and Nelson Burris.

NO "NOISE" IS GOOD NOISE for T-38 pilots and systems. Norair's team with EMI know-how, from left, standing, Sam Kerst, Inspection; Dave Hogarth, crew chief, Palmdale; Don Moore, Engineering; Glen Cook, Electrical; and John Eckert, noise specialist. Front, left, Sandy Elliot, Advanced Production; Nelson Burris, senior engineer; and Hank Marek, associate engineer.

Corporation Announces Far East Headquarters

Northrop Corporation has established permanent Far East headquarters in Tokyo, Japan.

The Corporation's Far East headquarters will be located in the Tokyo Boeki Kaikan, 2, 1-chome, Otemachi, Chiyoda-ku, Tokyo, under the direction of Rear Admiral Edwin T. Layton, USN, (Retired), director of Far East Affairs for Northrop-International.

Since 1959, Admiral Layton has been responsible for all Northrop activities throughout the Pacific Area, including Japan, Formosa and the nations of Southeast Asia, as well as India, Pakistan, Australia and New Zealand.

"Establishment of permanent headquarters for Northrop in the Far East further emphasizes the Corporation's expanding international activities and its increasing interest in that part of the world," said Northrop President Thomas V. Jones, in announcing the establishment of the new office.

Recently, he noted, Northrop concluded a licensing agreement with Nippon Electric Company, of Japan, under which NEC will manufacture Northrop target drones. In addition, Page Communications Engineers, is active in long-range communications systems in Japan, Korea, the Philippines, South Vietnam, Thailand and Formosa as well as being responsible for the trans-Pacific communications system stretching from Hawaii to the Philippines.

Northrop is now represented in more than 20 countries on five continents.

ST. PATRICK'S BRINGS C-B-C TO CAFETERIA

Norair's main cafeteria will reflect the spirit of St. Patrick's Day, Friday, March 17, it has been announced by Fred E. Wolfe, chief.

Complete St. Patrick's Day dinner for one dollar will headline the menu.

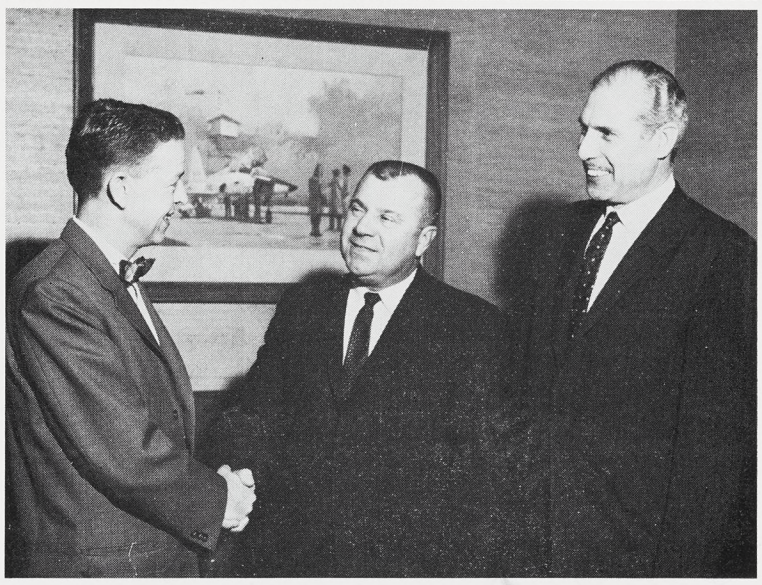
The bill-of-fare: There will be soup or salad. Entree is a three-way choice of corned beef and cabbage, Irish stew en cassolette, or breaded haddock square. Also included are potatoes, vegetable, roll and butter.

St. Patrick's Day diners may choose any beverage, says Freddy, except pints of milk. Dessert is on the house.

NEWS BRIEFS

(Continued from Page 1)

porate Vice-president and Norair General Manager Dick Nolan. Committee is now in effect. Second meeting was held last week. George Mangurian, director, Technical section, is chairman. Objectives of the committee will be (1) determine product area material requirements; (2) relate material technology to product areas; (3) integrate the total materials technology aspect of R&D or other similar programs . . . The committee is composed of organization heads from Technical section, Materials Research and Product Analysis, Structures Research, Manufacturing R&D, Quality Control Engineering group, and Research section . . . A prime responsibility of the committee is to assure a continuing leadership role for the Division in the rapidly advancing aerospace materials technology.



IN SUPPORT OF ASQC—Professor W. G. Ireson, executive head, Department of Industrial Engineering, Stanford University, left, visits Norair to confer on reliability with John Boscom, Air Force's chief, Quality Control Division, AFPR, and Bob Catlin, Norair manager, Quality Control Department. ASQC subcommittee work under discussion is on Classification of Characteristics and Standardization of Specifications. Professor Ireson is also consultant to Air Force's BMC.

NRC SEA SCOUT SHIP TO BENEFIT FROM SPORTS SHOW TICKET SALE

The giant annual Sports Vacation and Travel Show will take place at the Los Angeles Sports Arena, March 11 through 26, it has been announced.

Buy Bonds

Show time is 1 to 11 p.m. daily. Tickets, $1.50 each are available in the Personnel Activities office.

Money derived from sale of tickets is contributed to scouting. Seventy-five cents of the $1.50 for tickets sold at Norair will go directly to NRC Sea Scout ship Sea Gull, Unit 262.

Northrop-Norair News

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NORAIR DIVISION

CHARLES BRADFORD, Editor

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Fluoroscopy Technique Used to Check Space Age Parts in Motion

Weird and shadowy, yet perfectly defined, the test mechanism within the sealed black box performed its function. Wheels turned wheels. Cams tripped levers. Relays opened and closed. Altitude 60,000 feet. Severe vibration.

Peering through the binocular objectives of Quality Control's "In Motion Environmental Fluoroscopy" test stand, onlookers were able to see the exact workings of the specimen under various sets of conditions including those of outer space.

Malfunctions were spotted instantly and identified.

It is predicted that the method will do unique and valuable service in checking sealed equipment that must operate under severe and unusual conditions such as are found in extreme altitudes, outer space, and ocean depths.

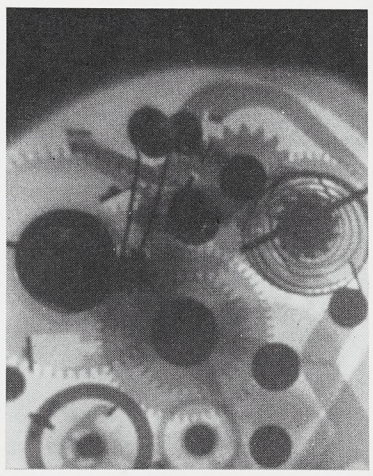
OBSERVATION — Senior Engineer Larry Hoogenstyn, observes action of test specimen under environmental conditions of 90,000 feet.

Quality Control's test stand for "In Motion Environmental Fluoroscopy" operates from a 150KV constant X-ray machine with fluorescent screen. A 5-inch image intensifier permits viewing, either direct visual through binoculars or by photographic records.

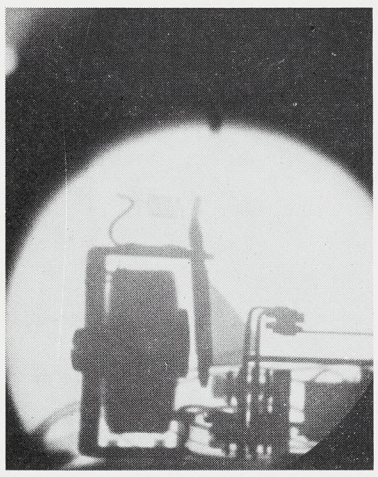
The test stand is shielded by 18 inches of concrete.

Typical test specimen used to make inspection runs during the development program was one consisting of a standard electric motor, a gear train which tripped two microswitches, which in turn controlled a double relay. This assembly was housed in a standard aluminum electrical box. Fittings were installed in the box to permit evacuation. The rod of an S31 shaker was attached to bottom of the box. Springs were used to support the weight of the specimen. The entire assembly was then encased in a larger steel box to simulate an environmental chamber. Suitable fittings were installed in the outer box to introduce liquid CO_2. In order to slow down the motion of the specimen during vibration to the point it could be properly viewed on the image intensifier, a strobic effect was used. The strob system consisted of a circular piece of stainless steel covered with sheet lead. Holes were punched two inches in from the periphery and the entire assembly was dynamically balanced about the center bolt. A drill motor was used to turn the strob and a Variac controlled its speed.

INSIDE INFORMATION—Discussing ramifications of Norair's "In Motion Environmental Fluoroscopy," from left are, Bob Catlin, manager, Quality Control Department; E. Jack Lancaster, chief, Quality Control Assurance, Air Force-BMC; Bob Parsons, manager, Q-C, Nortronics; and Norcrafters L. J. Knight, Q-C engineer; Art Ogness, chief, Advanced Missile Systems; Larry Hoogenstyn, Q-C senior engineer.



WHEELS — Electric motor and gear train was one test specimen used to check process.



RELAYS and contact points were observed, malfunctions identified. The three environments are applied simultaneously — PSI (altitude or depth), temperature, and vibration.

To demonstrate the feasibility of the application of three environmental conditions while the specimen is in operation and is being viewed in motion, the shaker is set to proper frequency and amplitude then put in motion. CO_2 is introduced into the outer box to lower the temperature while the box containing the working part is being evacuated.

A test run case history:

One set of relay contact points was misadjusted to chatter before making contact. This was observed and identified easily.

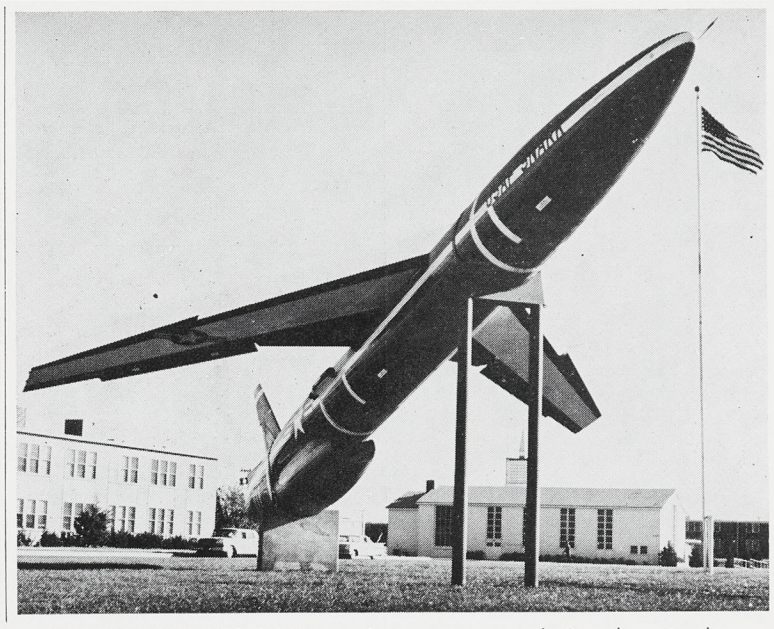
At minus 65 F, when the altitude environment approached 60,000 feet, the mechanism became sluggish and erratic.

At minus 85 F and at an altitude of 90,000 feet, the mechanism stopped entirely.

Without fluoroscopy such a malfunction would necessitate complete teardown of the "black box" and disassembly of the mechanism. Relationships between the three environments—temperature, pressure, and vibration—and part failure would have been difficult to establish.

Deemed to be most useful in inspecting components that do not perform in environment after passing all routine inspection checks, Norair's fluoroscopy process is presently scheduled for Failure Analysis. Plans to construct a regular "production" unit based on concepts developed by test findings are now under way.

The "In Motion Environmental Fluoroscopy" project was conducted in Quality Control Engineering. Senior Engineer on the project was Larry Hoogenstyn.



SNARK ON DISPLAY — Intercontinental Snark missile, SM-62, was recently mounted in front of headquarters Building, Amarillo Air Force Base. One of the first test vehicles, this Snark was fitted with the automatic Guidance and Flight Control System. After many tests, the missile was launched at Cape Canaveral, Fla., on March 12, 1957, its prime object being to bring back information on the Flight Control System controls. When mission had been successfully achieved, a radio-controlled chase plane took command and brought the missile safely home to Cape Canaveral after four hours and 29 minutes and 54 seconds of flight. This missile was then sent to Amarillo for training purposes.

Nolan on Reliability

(Continued from Page 1)

by establishing the framework of reliability effort within each operating segment.

"To provide an effective quality and reliability program, management must accomplish the following:

"Communicate the task intent in such a manner that each segment of the Division supports and implements the prescribed program.

"Effect a change in worker attitude toward product integrity which, with minimum penalty on cost and schedule, will result in delivered products which meet maximum quality and reliability requirements.

"Strengthen the specification-communication link between design and manufacturing to ensure that design objectives are met.

"Emphasize the importance of maintaining a communication level that stresses simplicity."

SQUARE JETS IN CALL FOR MORE DO-SI-DO FOLK

The NRC Square Jets extend invitation to all experienced Norcrafter square dancers interested in the do-si-do.

Dancing sessions are held every Friday night, 8 to 11 p.m. at the Henry Clay Junior High School auditorium, 124th and Western Avenue.

Regular caller is Ralph Hill.

Dick Rinehart, Square Dance commissioner, also reveals that the Club has instituted a program of special callers. On March 24, Marvin Yates will hold forth. March 31 it will be Carl Nelson. Other guest callers are now being lined up.

For information regarding beginners square dancing call Personnel Activities, extension 2784.

NRC ORGAN CLUB WILL ATTEND FOSTER CONCERT

Gail Skinner, NRC Organ Club commissioner, announces that the South Bay Association of Organ Clubs is presenting Orville Foster in concert Sunday, March 19 from 3 to 5 p.m.

Location is the Elks Club, 317 South LaBrea, Inglewood.

A limited number of tickets are on sale at Personnel Activities.

Buy Bonds

Integrated Management Systems

INTEGRATED MANAGEMENT SYSTEMS team in session. Chick Chandler, Carl Elliott, both from Engineering; Eric Borner, Computing and Data Processing Services; George Sterling, Contracts and Service; Carl Yates, Manufacturing; Keith Robinett, Administrative Services, chairman; Ed Bates, Quality Control; Larry Burnett, Computing and Data Processing Services; Don Grothe, Finance make up the Integrated Management Systems team. Team is developing plans for integration of Norair management systems. Integration mechanization and elimination of paperwork is goal. (See Norair News editorial "The Dashboard Must Go," February 15.)

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

DINING TABLE, modern-style, 6 chairs, $65. OR 8-5506. A

JOINNER, Delta, 4", w/metal stand $40; car radio, Motorola, 6V, $10; spray paint outfit, compressor & gun, $7.50; camera, Mamiya 16mm, $10. Box 801 A

RIFLE, Enfield, carbine 303 w/ammo, $13. PL 6-6578. A

BABY EQUIPMENT, crib, spring, mattress, hi-chair & musical rocking chair. $20. PL 5-7521. A

FORD, 1957, 4-dr., automatic trans., 4 new tires & paint, $650. OS 6-7109. A

BABY EQUIPMENT, crib, blonde, Babyline, 2 drop side, $25; wardrobe chest, $30; Babee Tenda, $10. DA 9-5718. A

CADILLAC, 1951 4-dr., 2-tone gray, r/h, $250. OS 9-3993. A

TELEVISION, 17", Olympic, table model, $25; bicycle, 26", boy's, $22. FA 8-5959.

LAWNMOWER, 17", $4.50. PL 4-9637. A

BOAT, 1960, cabin cruiser, 18' glass over wood hull, sleeps 2, 60 hp Merc. motor, speedometer, compass, 2 anchors, 500' nylon line, 18 gal. gas tank, tilt trailer, 1961 Coast Guard approved, $2200. OS 5-2005. A

HOUSEHOLD FURNISHINGS, washing machine, Maytag, dryer, Frigidaire, $50 ea. or both for $75. FR 5-4763. A

T-BIRD. 1956, $1800. DA 4-8663. A

AMPLIFIERS, 2, Heathkit, 55W, Model W-7A, wired & guaranteed, $55 ea. or both for $100. HA 5-8578. A

DODGE, 1941, 4-dr. sedan, $50. EX 3-8807. A

WASHER, Maytag, automatic, model AMP, $35. PL 1-8549. A

BOAT, 16' fiberglassed, 35 hp electric motor w/generator, running lights, tiltable trailer, life preservers, ski rope, '61 license, $950. OS 6-6108. A

TV. RCA. 17". w/stand. $20. UN 3-5196.

HI-FI EQUIPMENT, Eico, FM-90 tuner, Dyna PA-2 preamp., 15W amplifier, $60. PL 8-5956. A

FLOOR FURNACE, w/thermostat, complete. $65; tractor, hand-type, w/attach., $40; typewriter table, metal, w/shelf, $5. OS 6-5921. A

PORSCHE. 1957, 1600 coupe, r/h, seatbelts. $2200. PL 2-9436. A

POODLES, min., silver champion stock, AKC, $50 male, $60 female. OS 6-0624.

GAS RANGE, Chambers, $100. PL 9-4757. A

BUNKBEDS, maple, w/mattresses, $50. OR 7-3917. A

BABY EQUIPMENT, crib & mattress. $21; stroller, $7; car seat, $3; scales, $5. FR 9-5690. A

BABY FURNITURE, chrome, hi-chair, table & chair, teeter chair, rocker, stroller, cost $200; $125. OS 9-2433. A

FORD RANCH WAGON, 1956, w/Fordomatic, power steer., r/h, $645. WE 4-8414. A

RELAX-A-CISOR, $100. FR 3-1389. A

HI FI SYSTEM, 12" speaker w/cabinet, $40; Heath preamp., $20; 25W amp., $40. ED 8-5861. A

CLARINET. Pedlar, $35. DA 9-2734. A

BOATS, 1958, 16' w/trailer; fishing-type, 14', w/oars, $200. FR 6-0960. A

CRIB, BabyLine, dbl. drop sides w/matresses, $20. DA 9-1652. A

RIDES WANTED

7 a.m. — 3:45 p.m.

ROWELL AVE. & MANHATTAN BEACH BLVD., Manhattan Beach. Arlo Urban, ext. 2725, FR 9-3542. 2

AVALON & 223 ST., Torrance. H. F. Heard, ext. 2219, TE 4-0953 2

7:30 a.m. — 4:15 p.m.

PRAIRIE & CENTURY, Inglewood. L. Novak, ext. 1937. 3

8 a.m. — 4:45 p.m.

CARSON & CHERRY AVE., Long Beach. R. Barbara, ext. 2123, GA 7-9534. 5

RINDGE & CARNEGIE, Redondo Beach. D. Morrison, ext. 1835, FR 2-1402. 5

RIDES OFFERED

7 a.m. — 3:45 p.m.

AVALON & 223 ST., Torrance. H. F. Heard, ext. 2219, TE 4-0953. 12

FOR SALE

MG, TC 1948, reblt. eng., $1400. DA 7-9052. A

BUICK SUPER, 1953, hardtop convert., $195. GA 7-8553. A

MATTRESS, foam rubber, matching box springs, dbl. bed size, $40. DA 9-0148.

ENGAGEMENT RING, white-gold, $175. DA 4-3421. A

SAILBOAT, sloop-rigged, 13', glass laminated, Epoxy hull, dacron sails. $395. OS 6-8663. A

IRONER, GE, on casters, w/cover, knee & temp. controls, $50. FR 5-8335. A

FORD TRUCK, 1954, Model F-600, 2-spd. rear end, 172" wheel base, 8'x12' van body, $1100. DA 9-0469. A

BICYCLE, 26", boy's, candy apple red, $30. OS 6-4841. A

STAUFFER TABLE, $150. OS 6-2162. A

REDUCING TABLE, silhouette-type, cost $155; $100. FR 9-2659. A

CHEVROLET, 1949, good transp., $95. OR 2-1716. A

TV, 21", RCA $20; gun, S&W, K-38, $50; camera, enlarger, Minicord, 16mm, $75. FR 9-7775. A

WHEEL CHAIR, Everest & Jennings, adult size, $110. OS 6-3589. A

CHEVROLET. 1955, 4-dr., 6 cyl. r/h, stick shift, $425. OS 5-1446. A

OUTBOARD MOTOR, 7.5 hp, remote fuel tank, bailomatic, $210. DU 4-4017.

DODGE, 1952, 4-dr, $175; TV, 19", 51-52 Model, $40; telescopic antenna mast. 30'. $5. FR 6-1826. A

DINING RM. SET, 6-pcs., mahogany, $35. OS 5-5574. A

CRIB & MATTRESS, white, $30. OW 7-8046. A

FIAT. 600, 1958, black. $500. FR 7-2380.

BOAT, 16', Fiberglas, 81" beam x 41" freeboard, w/Mark 78 engine, rideguide controls, trailer, compass, cushions, windshield, $1180. FR 7-2317. A

HOLLYWOOD BEDS, 2, $10. ea. RE 1-7492. A

FOR SALE OR TRADE

CHEVROLET PKWD. STATION WAGON, '61 tabs pd., $1850 or trade equity for '56 Chevrolet pass. DA 3-7692. M

WANTED TO BUY

OSCILLOSCOPE, w/DC amplifier. LO 9-8412. B

JUICER, Acme, '60 or '61 model, PL 4-0808. B

FREE (to be given away)

KITTENS, male & female, shots & spayed. FR 7-2263. D

RENTALS OFFERED

APT., 2-bdrm., unfurn., 2 baths, pool, garage, $140 mo. OS 5-6133. E

Basketball Season Ends— Zephyrs Win

The NRC Basketball Club has just completed a fine season, it has been reported by Bill Greene, commissioner.

The league wound up in a first place tie between Zephyrs and Nortronics with the Traders a faraway third. Championship was settled in a playoff when the Zephyrs beat Nortronics, 51 to 44.

Zephyr team was composed of Greg Halberg, Dick Welty, Don Abeyta, Don Frost, Bill Greene, Scott Mitchell, Chuck Spade, Blanchard Davis, and Curt Harris.

High honors for the season:

Outstanding defensive player, Dan McGregor, Nortronics.

Outstanding team player, Walt Rusanoff, Nortronics.

Outstanding offensive player, Greg Halberg, Norair.

Top team averages were:

Greg Halberg, Zephyrs, 23.7; Dick Welty, Zephyrs, 16.5; Dan McGregor, Nortronics, 15.4; Gary Bunn, Independents, 14.6; John Rutkowski, Team X, 13.2; Don Greco, Independents, 11.9; Hank Musselman, Traders, 11.2; Tom Neal, Team X, 10.7; Dan Aungst, Art Service, 10.3; Roland Sunberg, Independents, 10.2.

NRC Vignette #4

NRC Bowling Club

NRC BOWLING CLUB—Deep concentration marks the outcome of a frame. Team championships are at stake. You must improve your score. The almost mythical 300 is somewhere in the bowler's Valhalla. The NRC Bowling Club, Commissioners—Corinne Davis, (ladies) at left; Bill Myerson, El Segundo; Earl Saunders, Norair; and Clancy Weiland, Nortronics—is the largest Norair sports activity, and perhaps the oldest. From very first Company days, the bowlers have been going strong, and stronger. It is a fine family-type participation sport, good equally for day or night shift. All Norcrafters can participate in bowling under Club sponsorship. Entry forms that will place you or your team in a league, are readily available at Personnel Activities. Handicap and scratch leagues are always rolling. Tournaments are held seasonally.

Campers to Nojoqui for March 18-19

The NRC Camping Club, Fred Armstrong, Norair commissioner, announces a camp-out at Nojoqui Campground scheduled for March 18 and 19.

There is no charge at Nojoqui, states Fred. Excellent hiking, very scenic and plenty of playing room for the children. Fishing is also an attraction for both surf and Lake Cachuma.

There will be a potluck dinner, 4 p.m., Saturday, with the usual storytelling and song campfire activities.

LATIN DANCING CLASSES NOW AT NRC CLUBHOUSE

Another new class in Latin ballroom dancing is on tap for those of a Terpsichoreal turn of mind, it is announced by Kay Walker, Ballroom Dance commissioner.

This time it is the Cha Cha.

The class is being offered at the NRC Clubhouse stand, 175 North Hawthorne Boulevard.

Starting date was March 2 but it is not too late to join, states Kay. The class will continue through 10 weeks. Cost is $10 a person. Couples and singles are both welcome.

SKIERS OFF TO MAMMOTH FOR NRC CLUB RACES

Big weekend is coming up for the NRC Ski Club on April 14 and 15.

Members will motor to Mammoth Mountain's Arlberg Chalet for the annual NRC trophy races.

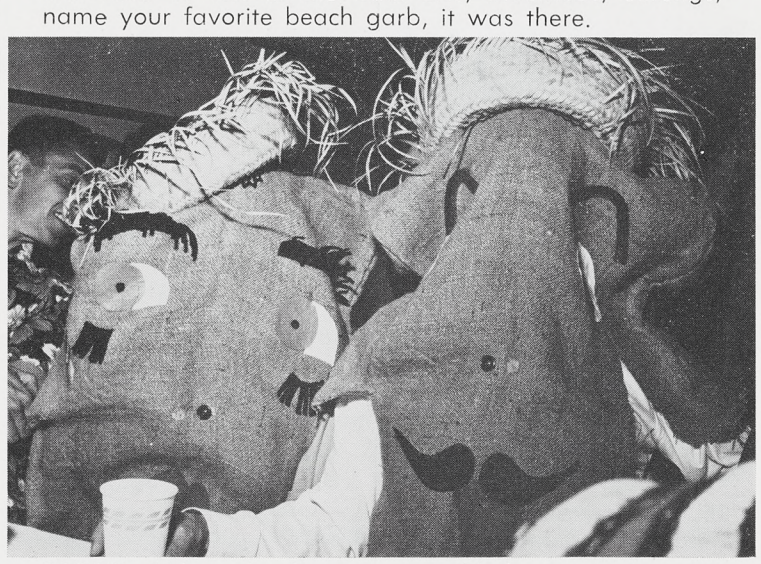
Bernie Shyffer, Norair NRC Ski commissioner, states that the cost is $7 a person a day for dormitory, breakfast and dinner included. For those that miss dinner Friday night, $2.50 will be refunded.

Deposit deadline was yesterday, but if you hurry—perhaps?

Beachcombers Ball

GOOD TIME HAD—A jolly good time was had by all true Norcrafter beachcombers at the NRC Boat Club's Beachcombers Ball. Here the folks walk the plank to a lively chantey from Leon Guide and his B-C 4-Some.

COSTUMES AND COSTUMES—Kennie and Audrey Payne, he former Boat Club commissioner, demonstrate the general idea of fun at the ball. Leis, muumuus, sarongs, name your favorite beach garb, it was there.



CARGO—What else but cargo could these costumes on unknown Norcrafters depict? Seems like everybody shook out all their reefs and took off over the bounding main. Boat Club is holding their first post-Beachcombers Ball meeting to make future plans on April 27.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, March 29, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — RAPID CITY, PRESQUE ISLE, EL PASO

NORTHROP-NORAIR

NEWS BRIEFS

LAMINAR FLOW CONTROL—Negotiations have been completed with USAF Aeronautical Systems Center, Wright-Patterson Air Force Base, for definitization of letter contract under which Laminar Flow Control program has been operating, it is announced by Al Morgan, vice-president, Contracts and Service. Negotiations will result in the receipt of a CPFF contract in the near future. Negotiation team was headed by Paul Champion, director, Contract Administration, and Milt Kuska, manager, Laminar Flow Control Technological Airplane Project Department, and Norm Krause, director, LFC Program and Contract Status . . . Cornell wind tunnel tests to establish wing contours for the technological airplanes have been

Fairchild Trophy

(See Page 3)

completed. Lines are scheduled for release next week. Tool design and tool fabrication work will start immediately thereafter . . . First LFC subcontract has been awarded. AiResearch-Phoenix has been signed to build compressor system and drives.

ADDITIONAL KC-135s—Norair Division is proceeding on manufacture of two additional KC-135 orders, it has been announced by Bob Lloyd, vice-presi-

(Continued on Page 3)

SERVICE HONOR—Major Jim Anthony, Northrop AFPR office, pins 20-year federal service pin on Allan A. "Dusty" Rhodes, longtime aerospace man in the Air Force LA Procurement District. Dusty served in famed Rainbow Division in World War I. He is presently AF tool and gauge specialist at Norair. Also, the Major presented 10-year pin to Paul Gill, Air Force Quality Control, now on Nortronics GAM-87 project. Prior to GAM-87, he was assigned to Snark program for past 5 years. He coordinated AF-Norair activities with MTF, and Presque Isle. Paul is former Navy man, metal smith aboard the USS Pennsylvania in World War II.

ATC STAGES CEREMONY FOR FIRST T-38 TALON

GENERAL BRIGGS ACCEPTS FIRST AIRPLANE

Aircraft spanning nearly half a century of powered flight swept past a high-ranking audience at Randolph Air Force Base during ceremonies last week that marked Air Training Command acceptance of the Norair-built T-38 Talon.

The twin-engined Talon, is the Air Force's first faster-than-sound jet training aircraft.

The sky parade of aircraft in the ceremony ranged from a 1914 model "pusher" to present-day jet trainers. They performed flybys and aerial maneuvers before an audience of high-ranking military and civilian officials.

In addition to the T-38 and the pusher, aircraft participating in the program were the PT-17, PT-22, BT-13, T-6, T-28, T-34, T-37 and T-33. All have held prominent roles in the Air Force pilot training program but all, with the exception of the T-37 and T-33, have since been "retired."

The first T-38 signalled its arrival at Randolph with a sonic boom directed at the crowd of spectators four and one-half minutes after the pilot announced his position over Austin.

Lt. Col. Arthur W. Buck, T-38 project officer for the Air Train-

(Continued on Page 2)

PIONEER—Major General Benjamin D. Foulois, USAF (retired), and Lt. Colonel Arthur W. Buck, ATC T-38 project officer, compare notes on the Talon during Randolph Air Force Base ceremonies. General Foulois was first man to pilot an airplane at San Antonio.

REVIEWING STAND—Distinguished USAF and industry officials observe historic display of Air Training Command aircraft as first Talon touches down at her new home in San Antonio. From left are Lt. General Charles T. Myers, USAF (retired); Thomas V. Jones, Northrop Corporation president and executive officer; General Foulois (see photo above); Lt. General Truman H. Landon, deputy chief of staff for Personnel, USAF; and Lt. General James E. Briggs, commander, ATC. Dick Nolan, Corporate vice-president and Norair general manager is at far left.

Norair Scientists Score Advances In Magnetogasdynamics Research

Norair Division's Space Propulsion and Power Laboratory has during the past 10 months, scored significant advances on three fronts in the field of magnetogasdynamics.

The Division research program, which seeks to perfect an MGD space engine deriving thrust from the acceleration of a plasma by crossed electric and magnetic fields, is being conducted by Sterge Demetriades, head, Space Propulsion and Power Laboratory, Dr. Richard W. Ziemer, senior scientist, and C. F. Young, engineer.

Specifically, the advances are:

(1) Achievement of a continuous and stable discharge with field emission which can pass high currents across the plasma stream.

(2) Discovery of a "cool" conducting sheath around the plasma jet with low momentum which reduces friction and erosion losses on engine electrodes to a negligible factor.

(3) Running the plasma within a magnetic field higher than hitherto thought possible, plus a mode of operation which makes "ion slip" also a negligible factor.

As a result of Norair successes, MGD's continuous thrust can be measured in high values—more than 3 pounds. Relatively high efficiency has been achieved—more than 40 per cent. Specific impulse is being constantly improved, current values being 1400 sec. with argon. Higher values can be reached with further perfection.

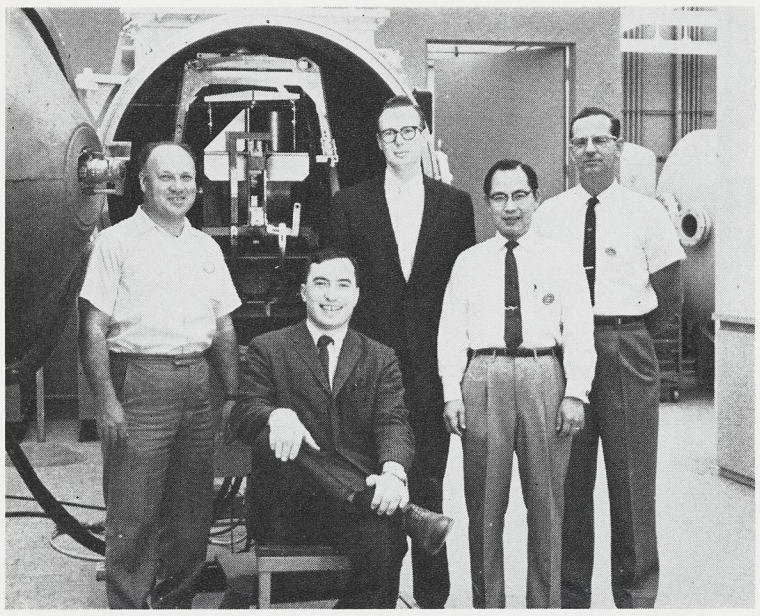
Norair's MGD laboratory engines are daily producing 2 to 3 pounds thrust for runs of 1 or 2 minutes duration. First runs at project outset, 10 months ago, were in the nature of 4 to 8 ounces.

Major components on which the MGD space engine will be based are a powerful electrical energy source (nuclear reactor), a plasma generator used to create a plasma stream and a plasma accelerator or MGD engine, used to provide thrust.

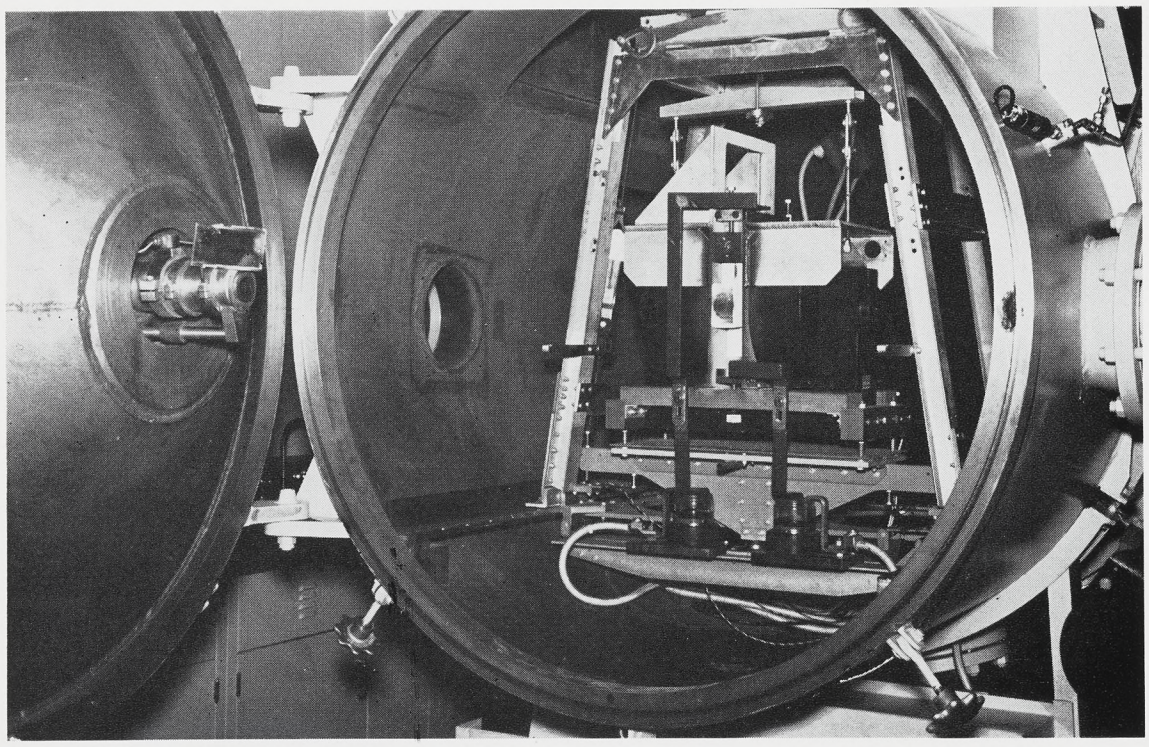
Next step in Norair's MGD project is to build a pilot engine to fit a completely integrated space propulsion system capable of maintaining thrust for indefinite periods of time, years perhaps, as a prelude to interplanetary missions.

Equipment for such an engine is not presently available. The Division must design and build special plasma generators, accelerators and special electrical generators to do the job. Much pioneering effort will be required.

Mr. Demetriades presented his research findings in a paper entitled "Experimental MGD Engine for Argon, Nitrogen and Air," before a joint meeting sponsored by the Institute of Radio Engineering, Institute of Aerospace Sciences, and the American Institute of Electrical Engineers, in Philadelphia, March 9-10.



SPACE PROPULSION MEN—Highly pleased with progress in magnetogasdynamics research are Norair Space Propulsion Norcrafters, from left, Jake Superata, technician; Sterge Demetriades, head of the project; Dr. R. W. Ziemer, senior scientist; C. F. Young, engineer; and Larry Goltra, technician. Space Propulsion and Power lab is part of Astro Sciences group.



EXPERIMENTAL EQUIPMENT—for measuring direct thrust of MGD engine. Designed and built by scientists and technicians in Norair's Space Propulsion and Power lab, equipment serves in Division's space engine research program. Vacuum tank, approximately 5 feet by 15 feet is MGD test tunnel. Plasma nozzle for nitrogen, argon, or air, is at left in center of hinged door. Thrust measuring balance with 1/5 ounce sensitivity is derrick-like structure inside. Ceramic channel and plasma accelerating DC magnet shown mounted on balance platform at center of tank. Device is believed to be the first such laboratory tool capable of direct measurements of plasma thrust. Much additional specially designed equipment will be required for prototype engine now being planned.

Anaheim in $1,700,000 Addition

Plans for a $1,700,000 multi-story engineering and administration center for the Nortronics Division of Northrop Corporation, it is announced by Thomas V. Jones, Northrop president.

The new research center will be built on the Company-owned 50-acre site at Anaheim, California, and will be occupied by Nortronics' Systems Support Department. It will serve as a focal point for advanced research and engineering in electronic, electromechanical, optical and a broad spectrum of weapon system support technologies.

The Anaheim research center is the sixth major Northrop facility development project currently in progress under the company's three-year, $32,000,000 capital investment program.

T-38 Heralds New Era in Air Force Jet Training

Arrival of the first T-38 Talon supersonic trainer at Air Training Command headquarters marks the end of the vast performance gap between Air Force trainer and combat type aircraft.

With the T-38, Air Training Command will enter a new era in pilot training—an era where Air Force pilots will be able to step almost directly from their basic trainer into high-speed combat aircraft without extensive—and expensive—transition training.

Design of the T-38 came as a result of speed gap recognized as far back as 1953. Air Training Command, on the basis of new high-performance fighters and interceptors which were already on the drawing boards, issued a requirement for a training aircraft to replace its existing basic trainer, the subsonic T-33.

PISTON-ENGINE DAYS

Major problem facing Air Training Command was the gradual loss of logical flying training sequence. Pilot training, at that time, began in the single-reciprocating-engine T-34, progressing to another piston-engine type, the single-engine T-28, and then to the single-engine, Mach .8, T-33 jet.

This sequence served fairly well in preparing the student pilot for the F-86 fighter and the B-47 bomber. But with the new Century Series fighters and interceptors on the immediate horizon, Air Training Command could foresee a much broader speed differential between trainers and combat aircraft.

HIGH-SPEED JETS

In early 1956 the general operating requirement for the new basic training aircraft was completed. It called for a "lightweight, economic basic trainer" capable of preparing basic pilots for operation of "high-speed jet aircraft of the present and of the future."

By mid-1956 Northrop Corporation had been awarded the contract for development of the new T-38 Talon.

SUPERSONIC T-38

The Talon evolved as a two-place, twin-engined, Mach 1.2, jet aircraft. The two engines, which produce a 7.3 thrust-to-weight ratio, can lift the aircraft after a takeoff run of 2600 feet. It can climb at a sea level rate of 30,000 feet per minute and can operate at a ceiling above 55,000 feet. Maximum top speed is well in excess of Mach 1.2 (Mach 1 is the speed of sound).

To Air Training Command these high-performance characteristics mean that major categories of basic pilot training can now include flying techniques peculiar to the newest Century Series fighters. These techniques, such as high sink rates (rate of descent when in landing attitude), high altitude supersonic flight, high altitude formation and navigational problems, were impossible to achieve in the slower and less powerful T-33.

BASIC TRAINING

With delivery of the Talon, Air Training Command's projected pilot training sequence will begin in the T-37 (another jet aircraft developed as a replacement for the T-28 and introduced in the 1950's) for primary training, and will advance to the T-38 for basic training.

Air Training Command officials, as well as pilots who have flown the Talon, are enthusiastic about its performance. Its smoothness in the transonic (as it breaks the sound barrier) region, its functional cockpit, stall characteristics and general ease of handling, all contribute to early student confidence and hence to safety.

TWIN-ENGINED SAFETY

The reliability of two engines, as a safety factor, reduces the possibility of aborted takeoffs, in-flight power failure or electrical system failure. Emergency procedures, air starts and single engine flight can be taught with a higher degree of safety.

The Talon will be used originally at Randolph for Category III testing. In this phase Air Training Command will subject the aircraft, support equipment, and personnel to various tests and evaluations under operational conditions.

After completion of these tests in September the first student class will begin training at Randolph and a firm training syllabus will be verified.

Completion of this phase is programmed for March, 1962, at which time the T-38 will become operational throughout Air Training Command's pilot training program.

Randolph

(Continued from Page 1)

ing Command, was at the controls of Talon No. 1. After a low level pass the Colonel brought the T-38 in for a landing and presented it to Lt. Gen. James E. Briggs, commander of the Air Training Command, who officially accepted the aircraft for the Air Force. After the presentation of the first Talon to Gen. Briggs, three additional T-38's performed acrobatics for the spectators.

A three-ship formation, made up of a T-37, T-33—aircraft now used in the pilot training program—and a T-38, signalled the end of the program with an acceleration run ending with rolls. All aircraft were placed on static display.

A guest during the ceremonies was Maj. Gen. Benjamin D. Foulois, USAF (retired), who on March 2, 1910, piloted the first military plane ever flown in San Antonio.

A luncheon was held at the Randolph Officers' Club after the presentation ceremonies. Guest speakers were Lt. Gen. Truman H. Landon, Deputy Chief of Staff for Personnel at USAF Headquarters; Thomas V. Jones, president of Northrop Corporation, which designed and manufactures the T-38 and Gerhard Neumann, manager of the Small Engine Division, General Electric, which manufactures the Talon's J-85-5 turbojet engines.

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NORAIR DIVISION

CHARLES BRADFORD, Editor

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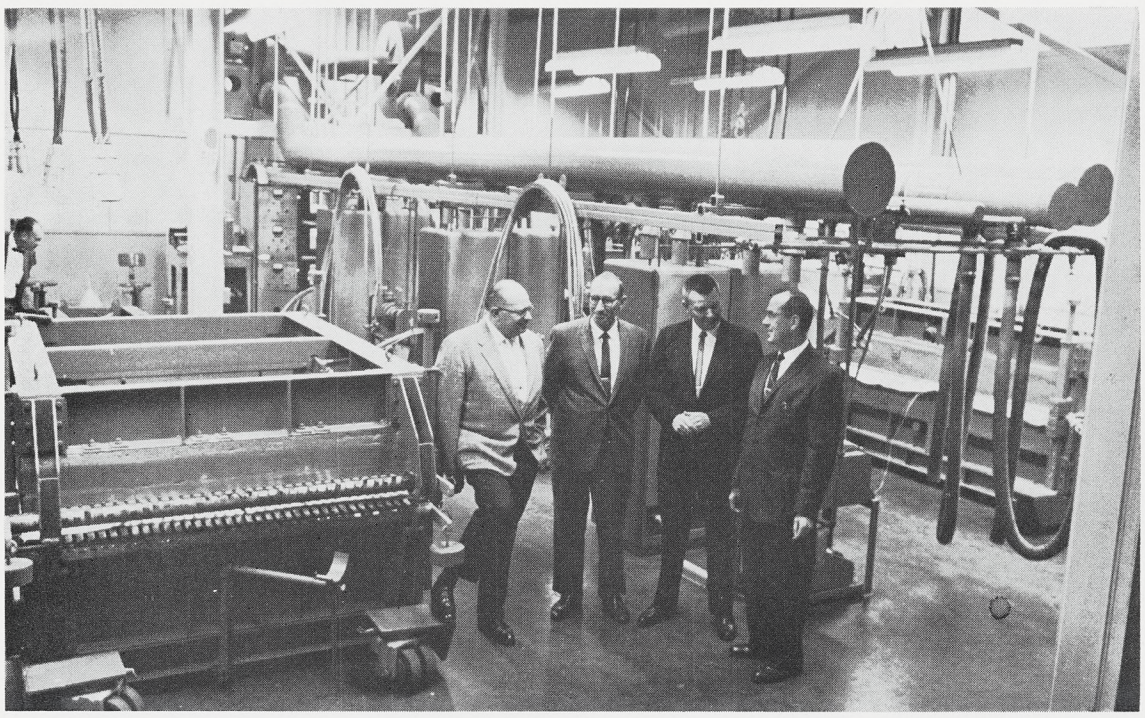
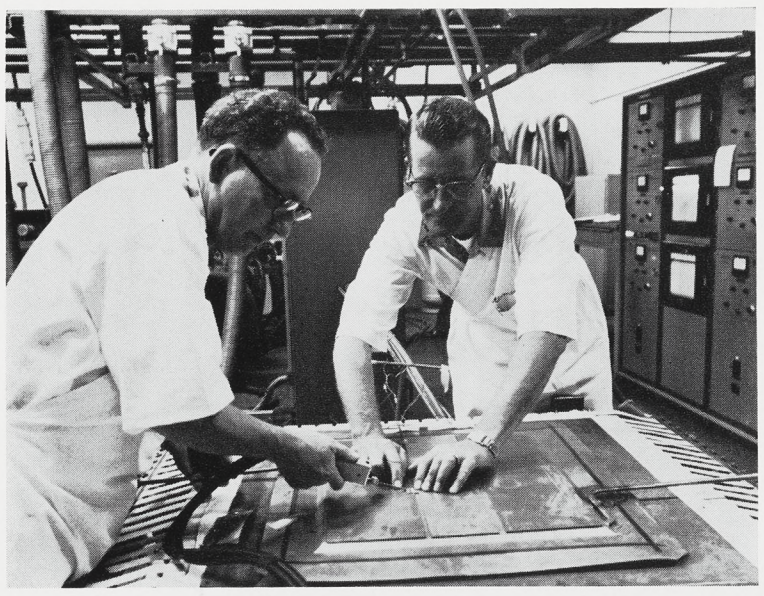
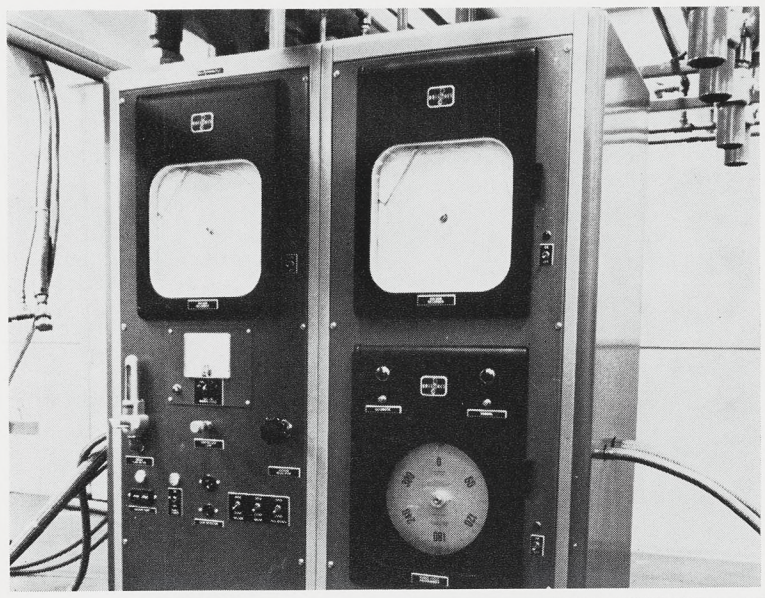
Norair's New Brazing Facility



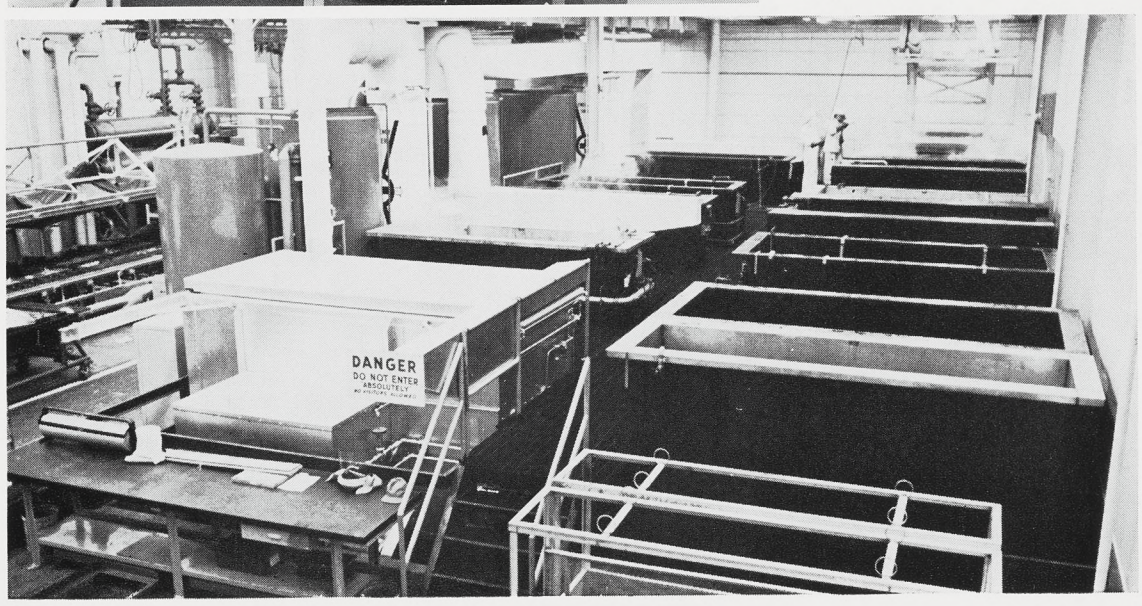
BRAZING ROOM—Photo shows part of Norair's new space age brazing facility. Based on North American Aviation's new glass rock die brazing processes, this Norair space age facility is now turning out honeycomb panels for the B-70 Valkyrie. Establishment of facility from go-ahead to first production panel was 90 days. Facility cost, Company funded, was over $250,000. Key Norcrafters in the program, from left, Steve Lopuch, facility engineer; Cliff Pelton, project facility planner; Bob Bridwell, research engineer; John Hill, tool engineer. Photo shows one of the mobile glass rock dies at left. Tubes overhead are for coolants, air, liquid nitrogen, and for argon gas used in envelope purging. Power cables in overhead installation are at left. First panel came out perfect.



ATTACHING THERMOCOUPLES — B-70 honeycomb, cleaned, encased in envelope, and purged eight times to assure precision brazing job is here instrumented prior to brazement. Norair brazing operators Q. C. Lampkins and Bert Huisman are shown attaching thermocouple. Heat is fed through ignitron power controller and programmer, rear right. Readings will be transmitted to chart recorders, also rear right. Alloy, in form of thin sheets positioned between honeycomb and faceplate, becomes soft at 1415 degrees, flows at 1500-1600.



NO LEAKS—One important key to success of space age honeycomb brazing for the B-70 is perfect envelope seal in order that part be brazed under conditions of absolute cleanliness and sterility. This equipment, a leak detector and automatic argon purge console instantly shows presence and location of envelope leaks. Argon gas, 99.99 per cent pure, is pumped in and out of the envelope at least eight times. Final moisture content must be less than eight parts H_2O per million. Actual brazing is done in vacuum.



FAIRCHILD TROPHY—Thomas V. Jones, president, Northrop Corporation, is presented the Arnold Air Society's Fairchild Trophy by General Frank Everest, commander, Tactical Air Command, at the Arnold Air Society national conclave in Detroit, Michigan.

Northrop Wins Fairchild Trophy for Defense Work

The Northrop Corporation has been awarded the Arnold Air Society's Fairchild trophy in recognition of "distinguished contributions" to the national defense effort.

Thomas V. Jones, Northrop president, accepted the award at the society's twelfth annual national conclave at the Sheraton Cadillac hotel in Detroit, Michigan.

The society, formed in honor of the late General H. H. Arnold, World War II Air Force commander, cited Northrop for its "design, ingenuity and scientific innovations."

The citation also singled out three Northrop achievements of recent years: (1) the first lightweight, high-performance supersonic jet trainer, the T-38A Talon; (2) the first 24-hour star tracking system, and (3) the nation's first intercontinental missile, the Snark.

NEWS BRIEFS

(Continued from Page 1)

dent, Manufacturing. Orders are for 72 and for 13 fuselage and outer wing ship sets. Price negotiations are due to get under way 4 April. "Deliveries on the two orders," Mr. Lloyd stated, "will carry through midsummer of 1962." Boeing KC-135 ship sets now stand at 578, 707-720 ship sets 257, for a total of 835.

USAF BRIEFINGS—Northrop Corporation top officials, headed by Senior Vice-president Robert R. Miller, will be at Wright-Patterson Air Force Base tomorrow and Friday for a special Corporate briefing on military trends and objectives. Norair contingent will consist of members of the Planning Council and will be headed by Corporate Vice-president and Norair General Manager Dick Nolan.

CANADIAN CAPABILITIES—Canadian Department of Defense Production team with representatives from major aerospace firms of that country will call at Norair 6 April, to brief Company officials and key people from Materiel, Engineering, and Traffic on "Presentation of Canadian Capabilities." Briefings will be held in Engineering conference room, fourth floor. Presentation is under cognizance of USAF's Los Angeles Procurement District. In addition to general briefing, Canadian company products will be shown via slides.

GOVERNOR'S PRAISE—John B. Clark, Norair director, Industrial Relations in recently resigning his long-time chairmanship of the Governor's Committee for Employment of the Handicapped was paid high compliment for his service record by Governor Edmund G. Brown. Mr. Clark, who resigned his chairmanship due to press of other duties, will remain on the committee as a regular member. He was originally appointed to the Committee in 1947 by former Governor Earl Warren, now Chief Justice, U. S. Supreme Court. Mr. Clark is also a member of the President's Committee on Employment of the Physically Handicapped having served there since 1948.

B-70 HONEYCOMB CLEANING FACILITY constructed to North American's specification and incorporating most advanced systems in industry. Cleaning facility consists of four separate cleaning processes,the honeycomb core and details, the 1020 steel envelopes, copper tooling, and alloy brazing sheets. Cleaning process begins with alkaline solution, progresses through series of immersions, spray rinses, additional alkaline solutions, scale conditioning, pickle inhibiting and passivation, final deionized rinses and drying. Parts are then assembled in white glove, air-conditioned operation.

RIDES WANTED

7 a.m. — 3:45 p.m.

LA BREA & PICO, Los Angeles. Earl Comstock, ext. 527, WE 4-8890. 2

8 a.m. — 4:45 p.m.

DELASONDE & WESTERN AVE., San Pedro. Ralph Gaskins, ext. 1718, TE 1-3241. 5

3:45 p.m. — 12:15 a.m.

CENTURY & AVALON BLVD., Los Angeles. Warren Hollis, ext. 649, PL 7-7283.

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

PICKUP, Ford, 1934, hyd. brakes, $75; Wonda-Chair set, demonstrator set, turquoise, interchangeable parts, cost $225; $125. OS 9-2433. A

RADIO-PHONO, $12; record rack & table, $5; TV or Hi Fi stand, swivel-type, $10; coffee table, pink & blue tile, black trim, 2'x6', $35. OS 9-6324. A

WASHER, 1957, GE, auto. $60. DA 9-6459. A

TV CONSOLE, Muntz, 24", blonde, $60. NE 5-1139. A

NAVION, low total time; 12-channel superhomer & GE low frequency, $5,450. FR 5-6716. A

REFRIGERATOR, Westinghouse, apt. size, $40; Studebaker, 1951 Commander V8, automatic trans., r/h, $150. FR 8-1140.

RIFLES, Winchester Mod. 70, .270 cal., Redfield ir. mounts, $75; Remington, Mod. 37, .22 cal., target-type, 10X Fecker scope, $110; 10X shooting coat, glove & shooting box, $15. DA 3-4583.

GAS RANGE, Gaffers & Sattler, w/ glass oven, $150; boat, 10' & outbd. motor, 7½ hp, both for $90. OR 7-6020.

PIANO, bungalow upright, $125. DA 7-9084. A

TV, RCA, table model, 17", $20. UN 3-5196. A

GO-CART, w/McCulloch engine, racing slicks, extra parts & gears, $250; lawn edger, electric, cost $30; $10. PL 5-4497.

AIR-CONDITIONER, Chrysler, 110V, 1 hp, 9000 BTU, $165. HA 9-2764. A

BOAT, 14', Glaspar Club Lido, 40 hp electric Merc. motor, tilt trailer, tow ropes, water skis, '61 license, $650. DA 3-9820. A

CHRYSLER SARATOGA, 1952, V8, 4-dr. sedan, new engine, trans., seat covers, $300. FR 7-3472. A

PLYMOUTH, 1953, 4-dr. sedan. $300. TE 1-6567. A

PLYMOUTH, 1948, good trans., $40. OS 5-7969. A

TRIUMPH, 30.5 cu. in., chromed, pearl green, $450. DA 3-0979. A

HOUSE, 4 lg. bdrms, 1¾ baths, lg. fenced-in yd. w/fruit trees & play area, $31,900. FR 7-3473. A

TV, Zenith, 21", table model 2222, $75. FR 4-1662. A

AMPLIFIER, Eico, AF-4, stereo dual, cost $64.95; $40. EX 6-9082. A

OUTBOARD MOTOR, Scott, never used, $210. DU 4-4017. A

DRUMS, 55 gal., $1 ea.; stove, oil heating-type, $12.50; chicken wire, $5; pump jack, $20; windmill pump, $5; butane tank, 25 gal., $12.50; posthole digger, Choremaster, gasoline, $75; inside doors $1 ea.; jet pump, 1 hp, $100. VE 7-4237. A

BICYCLES, 2, girl's, 26", $25 & $15. CR 6-4879. A

HOTPLATE, Kenmore, electric, $10. OS 5-6150. A

FREEZER, 21 cu. ft., chest-type, $95. OS 6-5253. A

FORD COUNTRY SEDAN, 1957, Fordomatic, r/h, w/w, pwr. steer. & brakes. T-Bird spl., $995. TO 7-0593. A

SKI BOAT, 14', 2 Mark 55, 40 h.p., Mercury outbds., Ride Guide steering, w/trailer, 3" channel const., $725. OR 4-3426. A

SLIDE PROJECTOR, Golde, 35mm, 300 W, $25. LO 9-9846. A

ACCORDION, Paoli Soprani, value $450; $150. WE 1-2855. A

HOUSEHOLD FURNISHINGS, living room set, 2 end tables & coffee table, $70; dinette set, w/4 naugahyde white chairs, $45. PL 5-9022. A

WANTED TO BUY

WASHER, automatic. PL 8-6890. B

BICYCLE, man's, liteweight. PL 3-6033. B

ATSF Gives Vacation Timely Tips

The Atchison, Topeka and Santa Fe Railway has some timely advice to offer vacation planners.

Morris H. Wright, the AT & SF passenger agent, cautions that all who are planning a railway trip during the summer months should make reservations now, if possible.

Advice applies to all modes of transportation, air, land, or water.

If it is the Santa Fe you are traveling on this summer, arrangements can be made at Santa Fe Railway's Inglewood ticket office. Telephone number is OR 7-1272.

Mr. Wright suggests that Norcrafters identify themselves as working at Norair, should they make Santa Fe reservations. This won't hurt and it certainly might help.

Also as a point of vacation interest, the Santa Fe advises that their trains are now open for reservations through September.

They have a "go now—pay later plan."

NRC ART CLUB NEW CLASSES

The NRC Art Club announces a series of working sessions to be held in the private studio of Joe Kalina, 3234 West 157 Street, Gardena.

Meetings will be held every Thursday from 7 to 10 p.m., it is announced by Stewart Luce, Art Club commissioner.

All Norcrafters and their families are invited to participate. Everybody paints or sketches. Mediums used run the gamut from oils on down the line.

Field trips and special Club exhibits are also planned.

TWILIGHT GOLF STARTS SOON

Norcrafter twilight golf leagues are now forming.

Last year's league golfers are being given preference but there is plenty of room for newcomers, states Golf Commissioner John Banerian.

Entry forms are available at Personnel Activities.

FOR TRADE

POCKET WATCH, 19 jewel, Waltham, dollar-size, trade for golf bag. PL 5-0947. C

RENTALS OFFERED

APT., 1-bdrm., disposals, unfurn., $70. OS 5-9695. E

HOUSE, 1-bdrm., & garage, unfurn., $67 mo. OS 5-1555. E

HOUSE, 4-bdrm., furn., 4 blocks from Northrop, $150 mo. OS 6-1574. E

CAMPING TRAILER, 15', fully equipped, $25 wk. Box 901. E

ROOM, TV, private entrance, kitchen privileges, $15-20 wk. OR 2-1240. E

RENTALS WANTED

HOUSE, 2-bdrm., fenced yard, garage, Inglewood vicinity, $85. GA 7-3157. F

PERSONALS

ORGAN INSTRUCTION, modern chording, styling, OR 1-8717. L

OLD WINDOWS, doors & glass wanted for brownie & Girl Scout's clubhouse. Will pickup. OS 9-3492. L

1 OR 2 girls to share apt. w/pool. Box 902. L

FOR SALE OR TRADE

STOCK RACK, white oak, for '59 ½ ton Chev., trade for 6.70x15 6 ply tires, $45. FR 2-8301. M

FREE (to be given away)

HOUSE—5 rm., Inglewood, you move it, you can have it. OR 4-5428.

NRC Vignette #5

NRC Travel Club

ANYONE FOR THE ISLANDS?—The NRC Travel Club is the most exciting (so say the loyal members) activity at Norair. Trips to Acapulco, Europe, Hawaii have been regular bill-of-fare items during the past seasons. Plans have also been discussed for trips to Tahiti, South America, Australia, Alaska. Name it — the world is the Travel Club's oyster. Photo shows typical pretrip fun session, Hawaii in this case. Commissioner Howard Cornelius is front left. "It's as much fun planning a trip as taking it," says Howard. "It even gives armchair types a chance to take part. People at our meetings get pretty excited when we really get down to details." Between trips the Club meets to see films and hear lectures on where to go next. The charter technique gets low fares, provides good fellowship all the way. The next trip coming up is of course Hawaii in May-June. In September it will be Europe. Trips are tailored to fit vacations. What do the Travel folk call themselves—"Gadabouts!" Their next meeting is April 12 at the Clubhouse.

DEEP SEA CHARTERS SIGNED

Norcrafter fishermen will welcome the news that the NRC has just signed the New Longfin and the Bolo for summer charter fishing.

First trip gets under way in two weeks, April 15, when the Bolo departs 22nd Street Landing at 2:30 a.m., it is announced by Harold Rapella, NRC Deep Sea Fishing commissioner.

The Bolo takes 14 passengers at $10 each. In case albacore are running at San Clemente Island, the fare must be raised to $12 to cover the extra nauticals.

Norcrafters are asked to bring their own lunch.

The Bolo is 38 feet, has 12 bunks and a galley. Skipper Roy Creel uses the fish-around system.

A week later, April 22, the first Longfin charter will take place. She leaves at 1:45 a.m. with a limit of 15 passengers. Russ Izor is the captain, fare is $12.

For reservations call Blanche, Personnel Activities, extension 2784. Also, those holding reservations, should call again one day before the trip to verify departure time.

A complete schedule of NRC summer fishing trips is as follows:

Bolo, April 15, May 20, June 17, July 22, August 19, September 16, and October 21.

New Longfin, April 22, May 27, June 24, July 22, August 26, and September 23.

NEW VITAMIN

Are you a vitamin man or woman?

If so, Personnel Activities now has a high potency therapeutic vitamin which is being offered to Norcrafters. One hundred tablets for $4.

This is in addition to the regular Merritt V-M formula vitamins that have long been a favorite regimen among Norcrafter vitamin takers.

Both the high potency and the V-M formula can be purchased at Personnel Activities or from the Norair Medical Centers.

MODEL RAILROAD INVITE OPEN

A record crowd of Norcrafter dads and sons visited the NRC Railroad Club meeting recently, it is reported by Jack Wilson, commissioner.

Invitation is still open, says Jack to all who are interested to come and see the system in operation, and to join if interested.

Meetings are every Thursday, 7-10 p.m. at the NRC Clubhouse.

NRC Good Time Table for April

For enrollment or information on activities listed below, call or contact Personnel Activities, Plant One, extension 2784. All clubs meet at the NRC Clubhouse unless otherwise noted.

ART CLUB, Stewart Luce
Meets Thursdays, 7-10 p.m., Joe Kalina's Studio, 3234 W. 157th St., Gardena.

BALLROOM DANCE CLASS, Wes Williams
Thursdays, 7:30-10 p.m. Newcomers welcome.

BIBLE STUDY, C. J. McGuire
Plant I—Daily, 11:30-12:15, Tool Design Bldg., 11-11:45, 5566 Conf. Room.
Plant II—Mondays & Thursdays, 12-12:45, Conf. Room 2.
Eng. Center—Daily 12-12:45, Reliability Conf. Room.

BOAT CLUB, Sandy Friedfeld
Meets 4th Wednesday, 7:30 p.m. Tentative Memorial Day Cruise.

BOWLING (days), Earl Saunders
Summer leagues forming.

BOWLING (nights)
Summer leagues forming.

BOY SCOUTS
Sea Scouts meet Tuesdays, 7:30 p.m.
Cub Scouts meet 4th Friday, 7:30 p.m.
Boy Scouts meet Thursdays, 7:30 p.m.

CAMERA CLUB (days), Howard Butler
Meet 1st & 3rd Wednesdays, 7:30 p.m.

CAMPING CLUB, Fred Armstrong
Meet 1st Wednesday, 7:30 p.m.
Special movie "Southwestern Holiday," April 22, 23, O'Neill Park Campout.

FISHING CLUB, Harold Rapella
Charter boats "Bolo" April 15, cost $10; "New Longfin" April 22, $12.

GEM & MINERAL CLUB (days) Bill Puniwai
Meets 2nd Wednesday, 8 p.m.

GEM & MINERAL (nights), Doyle Shook
Meeting place varies.
Meet 1st Wednesday, 1 p.m.

GOLF, John Banerian
El Rivino, April 22, 23, 10:30 a.m., cost $4. Entries open April 10.

MIXED CHORUS, Ron Henderson
Meets Tuesdays, 7:30 p.m.

MODEL RAILROAD, Jack Wilson
Meet in Annex, Thursdays, 7-10 p.m. Visitors welcome.

RADIO CLUB, Paul Serafin
Meet last Thursday, 7:30 p.m. Radio code class meets Tuesdays, Wednesdays, Thursdays, 7:30 p.m. NRC's station is W6VPZ.

RIDING CLUB, Tex Statley
Meeting April 9, 4 p.m., Western Avenue Country Club. April 9 ride 10 a.m. at T & L Stables.

SKEET CLUB, Bob Bagby
Shoots alternating Saturday, April 8, 22 at Rancho Angelus Range, Main & Broadway, 10 a.m.

SKINDIVING, Ralph Gonzales
Meet 3rd Tuesday, 7:30 p.m.

SOFTBALL
Preseason tournament now forming using 16" ball. Important meeting April 12, 7:30 p.m.

SPORTS CAR CLUB, Lou Perry
Meet 2nd Thursday, 7:30 p.m. Breakfast rally, April 30. Register Lot H, 7:30 a.m.

SQUARE DANCING, Dick Rinehart
Henry Clay Jr. Hi, 124th & Western, Fridays, 8-11 p.m.

SURF FISHING, John Pawlicki
Meets 1st Tuesday, 7:30 p.m. Special program next meeting plus election.

TENNIS, John Potts
Free instruction Saturday, Apr. 1, 15, 10 a.m., at El Camino Jr. College. Practices every Saturday. Indus. League play alternate Sundays.

TOASTMASTERS 212 (days), Jack Apodaca
Meet at Cockatoo Inn Thursdays, 6:30 p.m.

TOASTMASTERS 1398 (nights), Jay Rayner
Meet at Western Ave. Country Club Thursdays, 12:15 p.m.

TRAVEL CLUB, Howard Cornelius
Next meeting April 12, 7:30 p.m.
Hawaii trip, May 27-June 9, $398.

FOR THE LADIES

BOWLING (nights)
Summer leagues forming.

BOWLING (days), Corinne Davis
Summer leagues forming.

GIRL SCOUTS
Mariners, Tuesday, 7 p.m., Naval Reserve Center, 201 W. 126th St., Hawthorne, ages 13-18. All Norcrafter girls welcome.

KNITTING, Vera de Villiers
Meets Thursday, 7:30 p.m. Free instructions each meeting.

PUBLIC SERVICE AWARD

Northrop-Norair News

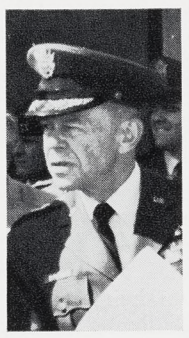
Issued biweekly by Norair Division of Northrop Corporation • Wednesday, April 12, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — RAPID CITY, PRESQUE ISLE, EL PASO

NORTHROP-NORAIR

NEWS BRIEFS

USAF BRIEFINGS—Northrop Corporation top management team headed by Senior Vice-president Robert R. Miller, attended a two-day series of management conferences at Wright-Patterson AFB. Norair contingent was headed by Corporate Vice-president and Norair General Manager Dick Nolan. (See News Briefs, 29 March.) On the first day, 30 March, the Aeronautical Systems Division presented "Technology for Tomorrow." Principal speakers were K. W. Zahrt, Plans Division D/CS, Plans and Operations; J. E. Keto, ASD chief scientist; and Colonel Florian Holmes, chief, Advanced Systems Planning Office and directorate, Advanced Systems Technology. On the second day, 31 March, "Advanced Planning and Programs" was presented. Principal speakers on this day were Colonel R. S. Nye, chief, Advanced Planning and Programs Office, and Colonel R. A. Jaynes, chief, Advanced Systems. Briefing coordination at Wright-Patterson was handled by L. C. Breckenridge, Norair-Dayton representative.



SPACE PILOT TRAINER, *WASHINGTON (AFNS)*—Past experience indicates that some of the T-38 Talon trained pilots will operate spacecraft of the future, said Lt. General James E. Briggs, commander, Air Training Command. General Briggs draws the parallel that if some of the men flying B-52 all-jet bombers today trained in 70 mph trainers, it is not hard to imagine that young students training on newly introduced T-38 Talon supersonic jet trainers will become the pilots of Dyna-Soar and other space vehicles.

MORE SKY PER GALLON — Laminar Flow Control project moved into high gear last week when wing lines were released following extensive Cornell wind tunnel tests. Milt Kuska, manager, Laminar Flow Control Technological Airplane Project Department, announces that lofting and tooling for the new wings are already in work. Fuselage modification fabrication is also in work. First wing parts are scheduled to enter fabrication in 90 days . . . Air Force Systems Command team headed by Aeronautical Systems Division's Lt. Colonel Walter Bennett, chief, and Hans Peot, assistant chief, LFC Project office, and John Patterson, LMBSA, visited Norair last week for review of LFC project status . . . LFC theme, "More Sky Per Gallon," is soon due for nationwide attention. It will be used for Northrop Corporation advertisements scheduled for early publication in Air Force/Space Digest, Airlift, Armed Forces Management and Aviation Week. See Pages 2 and 3 for reproduction.

EUROPEAN TEAM—Corporate Vice-president and Norair General Manager Dick Nolan has announced that Jack Wells, chief test pilot, has been appointed operations manager for T-38 European tour. Mr. Wells and his crew with airplane departed last week for Germany where the Talon will be demonstrated to key government, military and industry officials. Demonstrations will also be conducted for representatives of NATO nations . . . Following tour, T-38 will proceed to Le Bourget Field, Paris, France, and to the 24th International Air Show—May 26-June 4. There it will be displayed by the Air Force as part of this country's "United States Contribution to Aviation and Space Research."

FIRST PLACE SAFETY AWARDS WON BY EDWARDS, MARIPOSA

TALON SAFE ON LINE AS WELL AS AIRBORNE

Two perfect safety record awards have been presented to Norair by the Greater Los Angeles Chapter National Safety Council for no lost time accidents during 1960, it has been announced by Lee B. Johnson, Division safety engineer.

Facility winners were Edwards and Mariposa.

It was the second successive year that Edwards had chalked up a no lost time record.

The commendable showing for the desert crew, in the category of aircraft service and testing, was doubly attributed to strict observance of safe practices on the job and to the designed simplicity of maintenance of the T-38 Talon trainer.

Slips and falls from ladders and work platforms, chief cause of injuries in aircraft crew work, were virtually eliminated in the T-38 hangars.

The airplane, which has already an outstanding flight safety record, can be repaired and serviced from ground level. Ground handling equipment for the T-38 is of such design that there are no built-in hazards for mechanics, pilots, and inspection personnel on the flight line.

The Mariposa award was in the wholesale warehousing category and was for a perfect record in handling and transportation of materiel.

A total of 668 companies employing a combined total of 689,109 persons participated in the contest.

General industry accident incidences averaged 2.87 injuries for one million man-hours worked in 1960.

M-C Elects Nolan Prexy For 1961-62

Northrop Management Club members met Friday last week at the Inglewood Elks Club for installation of newly-elected officers for 1961, and to hear Corporate Senior Vice-president Robert R. Miller speak on "Communication and Control in Management."

The 1961 officers are: President, Ed Nolan; Vice-president, Dale Huss; Vice-president, nights, Leo Sacks; Secretary, Howard Harlan; Treasurer, Dona Page; Sergeant-at-Arms, Al Binsacca.

ED NOLAN

William Larrabee, Northrop Corporation vice-president, Legal, conducted the installation proceedings for the new officers.

New president, Ed Nolan, is

(Continued on Page 3)

Certificate Of Merit To Nortronics

The Navy Certificate of Merit, one of the highest honors which can be granted by the Navy to industry, has been presented to Northrop Corporation's Nortronics Division for its role in the Polaris Fleet Ballistic Missile Program.

Rear Admiral F. Julian Bec-

(Continued on Page 2)

TWO YEARS IN A ROW—Kelly Burke, Edwards chairman, Safety-Conservation committee, accepts first place award for no lost time accidents in 1960 from George Sopp, vice-president, Greater Los Angeles Chapter National Safety Council.

MATERIEL—Carl Hood, director, Norair Materiel, accepts a first place safety award from Mr. Sopp for Mariposa's perfect record in 1960. Firms numbering 668 and hiring 689,109 people participated in the competition.

RAIN IN THE FACE—KC-135 douses T-38A with "rain" during test over Edwards AFB.

Rapid City Nominates

RAPID CITY FIRST MEETING—Newest member of the Northrop Management Club family is Rapid City Titan T-2 site. Here, the membership gathers at Hotel Sheraton-Johnson for first nomination of officers. Nominated for office were, vice-president, Jack Cushman, Jim Van Dorn, R. L. Branning; for secretary, Ed Sellinger, A. E. Sandstrom, D. L. Sherman; for treasurer, Fred Hertel; for sergeant -at-arms, J. W. Straw, J. W. Mercer, W. D. Meeks, Virge Maniago.

HONORED GUEST — Jim Matthews, manager, Site Activation Department, is given special Rapid City Management Club gavel by temporary Chairman Scotty Smith. Scotty is past prexy of the Norair Club.

HONORED GUEST—John B. Clark, Norair director, Industrial Relations, also receives special gavel from Scotty to mark the occasion. Mr. Clark spoke to the membership, outlined M-C history and traditions.

NORAIR—T-2 project leaders and Hawthorne visitors are pictured with Division display at Sheraton-Johnson. From left are Jack Cushman, general supervisor, Industrial Relations; Mr. Matthews; Gene Musk, chief, Operation Services; A. H. "Andy" Anderson, chief, Administrative Services; Scotty Smith, supervisor, Materiel; Max Fayrweather, T-2 site manager; Ken McBride, chief, Quality Control; and Mr. Clark.

NORCRAFTER ELECTED PREXY

Bob Thomas, health physicist for Norair Nuclear Sciences laboratories, has been honored by election to presidency of the Southern California section of the American Health Physics Society. Bob currently is responsible for the safe utilization of all forms of radiation at Norair, and as secretary to the Northrop Radiation committee handles radioisotope licensing plus monitoring and control of radiation activities for all divisions of the Corporation.

Bob has been Norair's health physicist since December 1958. Prior to this, he spent two and a half years at Wright Field's Materials Lab as its chief health physicist. He received his degree in radio-biology at Ohio State in 1952.

LAMINAR FLOW CONTROL—Norair's LFC project will be theme of Northrop Corporation advertisements scheduled for early publication in Air Force/Space Digest, Airlift, Armed Forces Management, and Aviation Week. States the ad in part, "Northrop's Laminar Flow Control will enable large aircraft to fly up to twice as far as they now can, and stay aloft proportionately longer, on the same amount of fuel. Or it will permit them to carry heavier payloads over a given distance. And it will accomplish this without increasing the airplane's size, weight, or engine power."

Navy Award

(Continued from Page 1)

ton, commander of the U. S. Naval Base at Los Angeles, presented the certificate in behalf of the Secretary of the Navy. Formal presentation took place at Anaheim with Dr. William F. Ballhaus, Nortronics general manager, accepting for the firm's personnel at Norwood, Massachusetts, and Anaheim.

The Secretary of the Navy's citation reads as follows:

"Previously assigned the task of developing an optical star tracking system for the guided missile submarine, Nortronics rapidly developed a more refined system to meet the requirements of the first ballistic missile system. In converting to the requirements of the FBM program, Nortronics met all accelerated schedules and produced the Type-11 optical star tracker which immeasurably advanced the state-of-the-art in both optical and mechanical design.

"Nortronics also designed and produced a missile checkout system (DATICO) within the most stringent time limitation. Both accomplishments contributed significantly to the first successful launching of the Polaris missile from a submerged submarine on July 20, 1960."

New Procedure For Division Long Distance

Norcrafters are asked to determine before they dial.

Will the call be long distance?

Administrative Services advises that newly installed toll diverting equipment is causing a temporary abnormal workload for Norair long distance operators. Equipment was installed April 10.

Administrative Services asks that in all cases, Norcrafters should dial 10 to place a long distance call. Only authorized persons are permitted to use Company long distance lines.

The use of 8 or 9 level telephones will not be affected if the proper index number 8 or 9 is used with the assigned exchange. If 8 or 9 is used incorrectly, the operator will answer and request that you hang up and redial.

All person to person long distance calls will be placed with the operator.

All station to station long distance calls will be dialed by the operator. She will leave the line when the ringing tone is heard.

HARPER WELTON ON PACKAGING BEFORE AMA

Harper R. Welton, supervisor, Norair Mechanical Systems and Packaging branch, gave a talk on "Data Systems for Military Packaging," before a special briefing session sponsored by the American Management Association.

The session was held at McCormick Place Exposition Hall, Chicago, Illinois, April 6 and 7.

Attending were key figures in packaging and management from both military and industry.

GAIENNIE ON BRAZING AT U OF WICHITA

Barny Gaiennié, chief, Manufacturing Research and Development group, spoke before an audience of officials and key members of aerospace firms from the midwest on Wednesday, March 28, at the University of Wichita, Kansas.

Topic of Mr. Gaiennié's paper was "Modern Brazing Practices for Honeycomb Sections."

Northrop-Norair News

VOL. 19 NO. 10

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A NORTHROP CORPORATION PUBLICATION
Published every other Wednesday
NORAIR DIVISION

CHARLES BRADFORD, Editor

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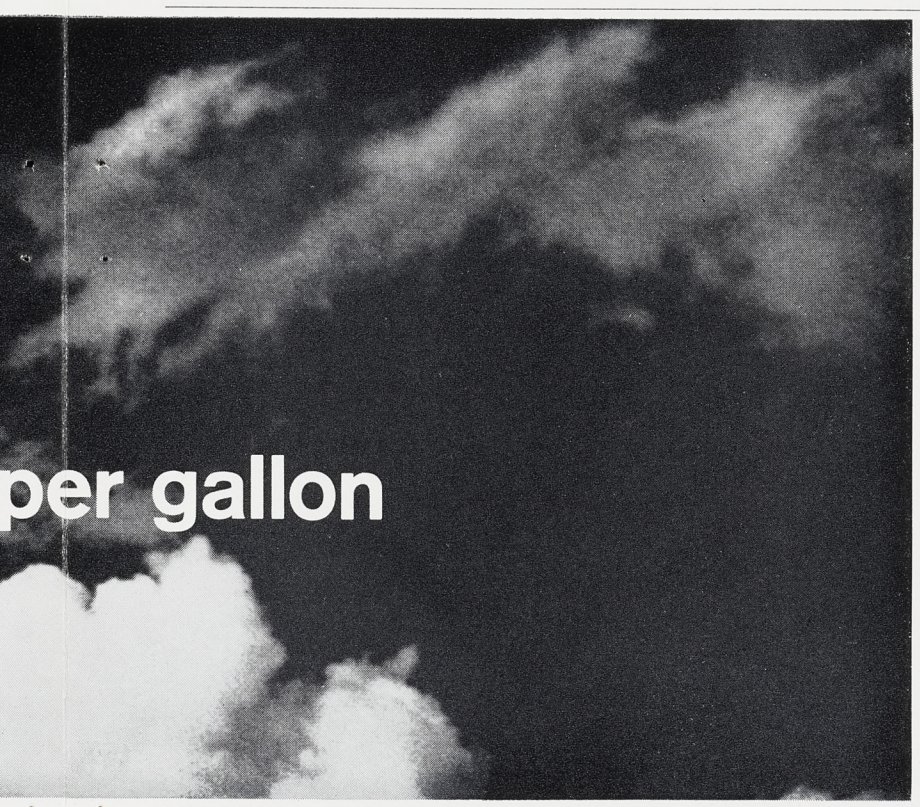
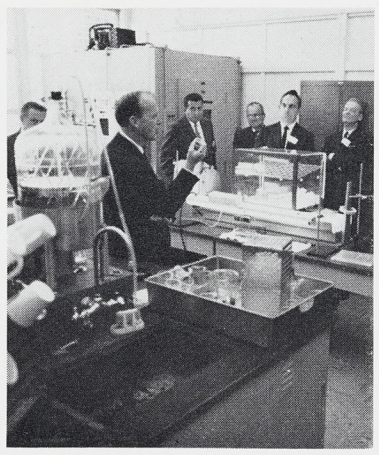


Chamber of Commerce Day

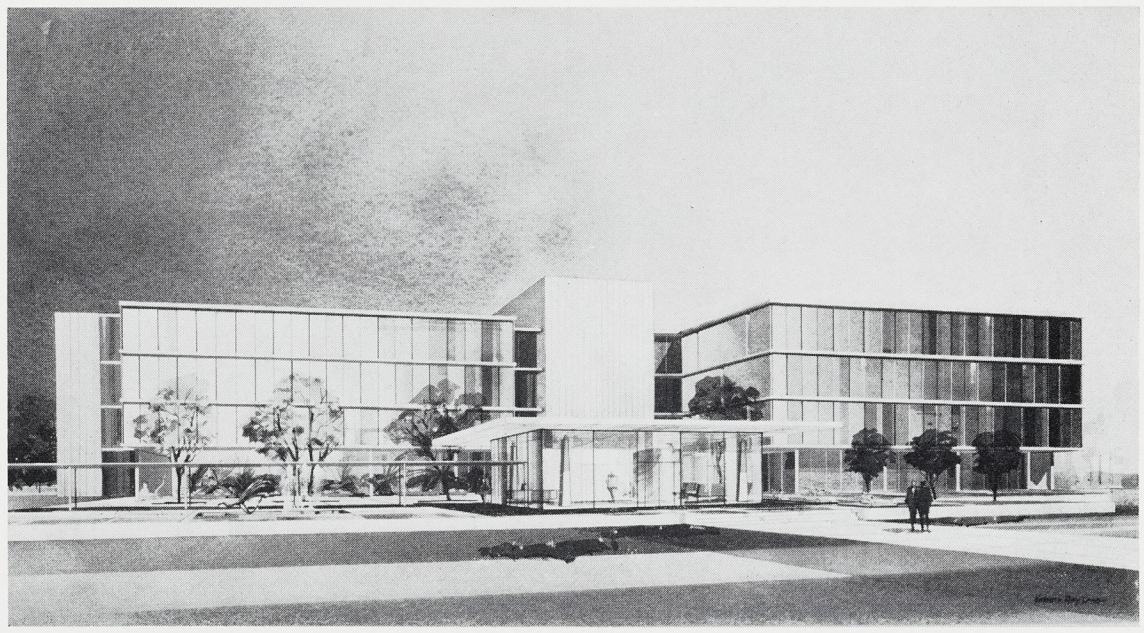
CHAMBER OF COMMERCE DAY—Norair and Nortronics were hosts to the Board of Directors and Committee chairmen of the Hawthorne Chamber of Commerce. Local business leaders visited for briefings, lunch, and facility tour. Being greeted by Dr. W. F. Ballhaus, and Dick Nolan, Corporate vice-presidents and general managers, Nortronics and Norair respectively are Chamber visitors, John B. Flanagan and C of C President W. R. Ellis, at left, and Jack Leadbetter, right.

TOUR STARTS—From left at door, Charles Eyres, Don Roberge, guest Val Bates, A. D. Dye, and guest Ed Eldred. Visitors went to Science Center for briefings on Norair's science projects.



BIOASTRONAUTICS — Dr. Lindberg explains problems of life in space. From left are Duane Olmore, visitors Ted Revere, Craig Edwards, R. M. Baldwin, C of C Mgr. Bob Hartman.

STAR TRACKING—Nortronics' Otto Hartmann, explains deep technology of lens making. From left are Charles Eyres, guests Elwood McCain, Vernon Herbst, Ted Revere, and Val Bates. Lunch was in executive dining room. Host was Jack Mannion, assistant to the general manager.



NEW MULTISTORY engineering and administration center will be constructed by Nortronics at Anaheim. This 90,000 square foot structure will be the focal point for expanding programs in electronics, systems support, optics and countermeasures.

New Center in Construction At Anaheim

Start of construction last week on a new $1,700,000 multistory engineering and administration center highlighted ten-year anniversary ceremonies at Northrop Corporation's Nortronics - Anaheim plant.

Orange County civic and business officials joined Nortronics-Anaheim in marking the milestone. A scale model of the impressive new structure was displayed at a civic luncheon hosted by Thomas H. Quayle, vice-president and manager of the plant.

Northrop President Thomas V. Jones in a message to Nortronics personnel said, "Expansion of Northrop's facilities in Orange County is a tribute to the hard work and achievement of the past ten years and is tangible recognition by our board of directors and corporate management of the promising future for the Systems Support Department."

The new center in Anaheim is being constructed by the firm of O. H. Oltmans of Monterey Park and will be ready for occupancy after the first of next year.

M-C Prexy

(Continued from Page 1)

general foreman in 5508 where he is in charge of paint and process, sealing, graphic arts, and upholstering.

He came to work at Northrop as a trucker, Manufacturing Control, in November 1940.

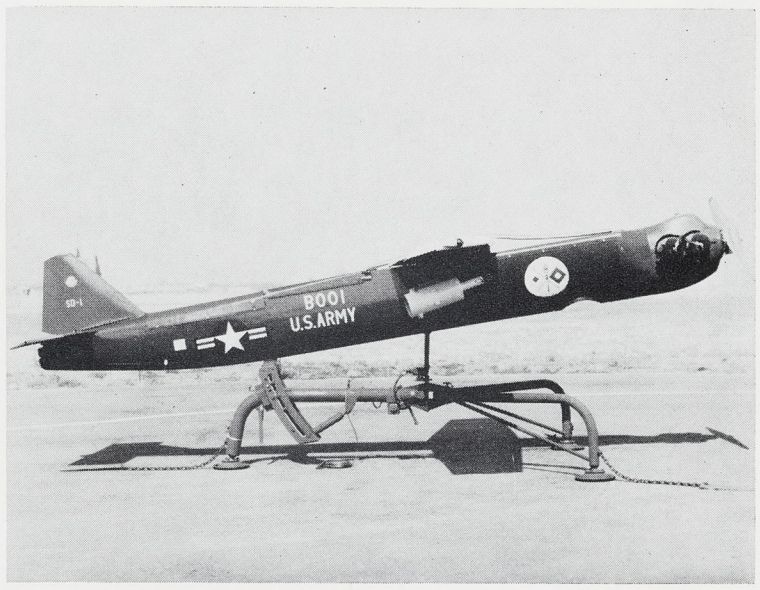
Ed worked his way up the ladder through the years. He moved on to leadman in Manufacturing Control and to general leadman in 1942. He was made supervisor, Manufacturing Control in 1947. During high level of production of the F-89 and the Snark, he held the position of assistant superintendent, Manufacturing Control in 1950 and Fabrication Operations in 1957. When production on these orders dwindled, he was moved to general foremanship, Sheet Metal Fabrication in 1958.

Ed spent two years in the service during his Norair tenure, 1944 to 1946 in aviation ordnance, U.S. Navy.

Ed's hometown is Lillbourne, Missouri. His hobbies are hunting and fishing.

BUY BONDS

NASA X-15 Pilot Neil Armstrong shows the new "hot nose" developed by Northrop Corporation to aid the X-15 during the critical exit and re-entry phases of hypersonic flight in the upper atmosphere. Replacing the needlelike nose used in earlier flights, the new "hot nose" senses the X-15's attitude angles which must be corrected to avoid intense frictional heat limits as the research craft probes increasingly higher altitudes.



RADIOPLANE is currently producing a quantity of SD-1 Combat Surveillance equipment including 32 SD-1 drones and related support equipment for delivery to the United Kingdom. Delivery is expected to be in May. Shown above in takeoff position on a zero-length launcher, the highly mobile SD-1 is currently operational with U. S. Army field units both in the United States and overseas. It may be quickly positioned and zero-length launched in rough terrain from a camouflaged position and can perform day or night photo intelligence and reconnaissance missions. Other tactical missions may be satisfied by utilizing specialized sensory equipment.

RIDES WANTED

7 a.m. — 3:45 p.m.

HAWTHORNE & HALLISON, Torrance Viola M. Jones, ext. 2075, FR 1-1320. 2

61ST & CRENSHAW, Los Angeles. Earle Comstock, jr., ext. 527, WE 4-8890. 2

IMPERIAL HWY. & DENVER, Los Angeles Pat Hernandez, ext. 1243. 2

7:30 a.m. — 4:15 p.m.

PACIFIC COAST HIGHWAY & AVALON BLVD., Wilmington. Sarah Albanese, ext. 1494. 3

RIDES OFFERED

8 a.m. — 4:45 p.m.

MELROSE & VAN NESS, Los Angeles C. M. Spindel, ext. 518, HO 5-8023. 15

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday one week before publication.

FOR SALE

SAXOPHONE, E Flat, recond., $75. FR 5-4910. A

MOTORCYCLE, 1956, Zundapp, 600 cc, $250. OR 7-7949. A

MINIPLANE PLANS, Smith, $15; BT-13 flight, repare & O/H T.O. $15. CI 6-1069. A

BUICK SPEC. 1951, r/h. Dynaflo, good trans. 2-dr. sedan, $195. PL 5-2723. A

TYPEWRITER, Smith-Corona, portable $50. PL 4-6940. A

BICYCLE, 26", boy's, $22; TV, table model, 17", Olympic, $25. FA 8-5958

BICYCLE, men's, 26", 3-spd, liteweight $15. FR 7-1807. A

OLDSMOBILE 98, 1953, 4-dr. sedan w/w, power brakes, r/h, $250. FR 5-3149. A

RINGS, engage. & wedding, lady's white gold, w/6 diamonds, 3 in each ring. $95. FR 6-6543. A

VENETIAN BLINDS, w/cornices, 36"x54", $4. PL 5-7521. A

LAWNMOWER & edger, gasoline-type, $75; master headboard, plastic, king-size, $5. Box 1001. A

VOLKSWAGEN, 1957, new w/w, paint brakes, battery, $1050. FR 8-2761. A

GOLF BAG, Leeds, w/plastic inserts & Caddiemaster golf cart, $40. FR 1-1932

COUCH & CHAIR, green, frieze, $20 DA 9-1497. A

V8 ENGINE, 59A block, $15; car heater, Southwind, $5; Ford car radio, $5. DA 4-8663. A

CRIB, Babyline, Kantwet mattress, w/side bumpers, $19; Strollee stroller, $6. FR 9-5690. A

BUICK SUPER, 1956, conv., full power equip., $795. OS 6-2383. A

OLDS, Super 88, '54, convert., power steer. & brakes, r/h, $550. GL 4-5420. A

STUDEBAKER, 1947, $75. FA 8-0450. A

FREEZER, 1959, Marquette, 14 cu. ft., upright, $200. DA 4-5880. A

OUTBD. MOTOR, Johnson, 5 hp. $60 DA 3-2475. A

STUDIO COUCH, orange Naugahyde, walnut legs, w/matching detachable bolster, convert., $50. PL 7-1217. A

HEADBOARDS, 2, metal frame for Hollywood bed, $15; movie camera, Bell & Howell, w/leather case, $25; spark plugs, ring-type, 11, $8. FR 5-0061. A

FORD CRESTLINE, 1954, 4-dr., V8, automatic trans., r/h, w/w, $375. FR 5-5998.

CAR COOLER, 1960, Regal, 12V motor w/115V trans., $20. PL 1-7077. A

TABLE SAW, Sears, 10", $100; musical rocking chair, child's, $3; bicycle, boy's, 26", liteweight, $10. PL 7-2753. A

STENTORETTE, De Jur Grundig, latest model, w/microphone, 3 tapes & conv. unit, cost $250; $155. TR 1-4544. A

TRAILER, Kit, 45', furn., lifetime awning, $4800. DA 9-9521. A

TV., BLONDE, 21" comb., $100. OS 6-7468. A

CADILLAC, 1952, conv., 46,000 orig. miles, $450. FR 5-6716. A

GAS RANGE, Western Holly, 4 burners, grill, $50. FR 2-8711. A

VOLVO PV544, 1959, 4-spd. w/big engine, r/h, w/w, red w/red & white interior, $1475. PL 5-7231. A

CROWBAR, $1; ax, $3; ventilator fan, $9; bicycle, 26", $15; chair, maple, $8; upholstered bench, $2; child's desk, $5; lawn edger, $9; pole lamp, $3; bathroom stool, white, $1; clothes hamper, $1; mirror, maple-framed, $5. OS 6-1404. A

NRC GOLFERS OFF TO RIVINO APRIL 22, 23

The NRC Golf Club will stage a tournament at El Rivino Country Club in Bloomington, April 22 and 23, it is announced by John Banerian, Norair golf commissioner.

For those who haven't been to Bloomington, it's near Riverside. Travel east on the San Bernardino Freeway to the Cedar Avenue turnoff in Bloomington, turn south and continue on to El Rivino Road, turn right at El Rivino Road to the golf course.

FOR SALE

KAISER MANHATTAN, 1952, 4-dr. sedan w/radio, $125. OR 2-7897. A

10 ACRES in Joshua Tree, Calif., $335/acre. OR 2-9008. A

DISHWASHER, Youngstown, $50. OS 6-1471. A

HAND LAWNMOWER, Pennsylvania, reel-type, $10; Hollywood bedframe & springs, steel, twin-size, $10; doll buggy, $1; doll beds, wooden, $1.50 ea. FR 4-3036. A

HAIR DRYER, upright, $25. AX 1-6209. A

DRYER, Westinghouse, electric, $75. OS 5-7790. A

TV, 17", AMC w/stand, $45; fan, floor-type, 2-spd., $12. EX 6-9156. A

WASHER, Kenmore, automatic, 6-yrs.-old, w/water level & temp. controls, $40. DA 3-6050. A

PROJECTOR, Bell & Howell, TDC-300 W, w/semi-auto. changer & 4 magazines, $30. FR 2-8301. A

RECORD CHANGER, Model RC 80m, 3-spd. Garrard. $25. TO 9-6163. A

RANGE, Estate, full-size, 4 burner, $15. DA 6-0340. A

FORD GALAXIE, 1960, 2-dr., cost $4000; net payoff $2000; $200 for equity or older model. PL 4-4817. A

FOR TRADE

EXTENDED RANGE SPEAKER, Jim Lansing, 15", Model D130, trade for electronic test equipment of comparable value. PL 5-3777. C

CAMERA, Rolliflex, & case, trade for good reel-type power lawnmower or portable TV. OR 2-2370. C

HOUSE FULL OF FURNITURE, trade for trailer or down payment on trailer. Box 1002. C

FREE (to be given away)

CAGES, suitable for rabbit, or chickens, 4 12' compartmented-wire. OS 6-5253. D

RENTALS OFFERED

APT., 1-bdrm., unfurn., 2 blocks west of Norair, $80 mo. OS 5-8187. E

FOR SALE OR TRADE

HOUSE, 3-bdrm., den, 1500 sq. ft., $29,500 or trade for smaller house or apts. TE 3-9430. M

DUPLEX, 2-bdrm., 1½-yr-old in Norco, Calif., $17,000 or trade for Los Angeles property. FR 7-4459. M

BICYCLE, girl's 20", $7; or trade for boy's. 24". TO 7-0593. M

SPEEDBOAT KIT, 16' long, 7' beam, Glenn L. design, hull 90% complete, $200 or trade for equal value trans. car. OS 9-5892. M

DANCE CLASSES UNDERWAY AT NRC CLUBHOUSE

You like to Cha Cha, foxtrot, tango, waltz, or swing? Or dance?

If so, a novice and intermediate class in this important social skill is being offered every Thursday evening at the NRC Clubhouse, it has been announced by Wes Williams, Ballroom Dance commissioner.

All novice classes are conducted Thursdays, 7 to 8:30 p.m. under the direction of international medal winner, M. W. Lewellin. A new series for the Cha Cha and mambo will begin May 11.

The intermediate class is also conducted Thursdays, 8:30 to 10 p.m. immediately following the novice go. Dance director is Bill Martin. A new series starts tomorrow night, the first of five weekly meetings which will be devoted to the west coast swing.

NRC Vignette #6

NRC Skindiving Club

SKINDIVING—Who said don't go near the water? Another very popular NRC Club, the Skindivers, rides high on the popularity crest of one of the newest, most interesting, and fascinating sports. They go down to the sea each weekend, once there, they go in to explore the subterranean wonders of nature's waterland. Equipped with the latest in suiting, oxygen equipment, underwater lances, these folk roam far and wide beneath the tide. Fishing, abalone gathering, exploring sunken wrecks, ocean-going rockhounding, even gold panning, are routine activities. In photo, checking equipment prior to a day of diving are from left Jim Morrison, Jim Ashby, Bob Koerner, commissioner-Nortronics, Dot Morrison, Ralph Gonzales, Norair commissioner, Doug Doner. All Norcrafters are welcome to join the Skindivers. Plenty of experts are on board to help you learn the fine points of how to do. Skindivers meet third Tuesdays at the Clubhouse. Planning is now under way for a summer of practicing with full undersea equipment. Regular competition with neighboring clubs is important part of activity.

NRC Annual Art Show— For June 5

The Northrop Recreation Club will present its 14th Annual Art Awards Exhibit, to be held at the Hawthorne complex June 5 through June 30, it is announced by Stewart Luce, Art Club commissioner.

Awards this year will be in two categories, professional and amateur.

Cash prizes in each category are first place, $75; second place, $50; honorable mention, $25.

Sweepstake prize which will be determined by popular vote will also be awarded.

Competition is open to all personnel of Norair, Nortronics ES&E; and Nortronics SS. This includes families—husband, wife, or dependent son or daughter.

Rules and regulations for the exhibit may be obtained at Personnel Activities, Plants One, Three, and Anaheim, and at Personnel office, Plant Two and Industrial Relations at Mariposa.

Deadline for entries is June 2. All pictures, including the cash prize winners and sweepstake winner will remain the property of the entrants and will be returned at the end of the exhibit.

DISCOUNT FOR ICE CAPADES AT PA OFFICES

Personnel Activities has discount coupons on hand for the 1961 Ice Capades, it is announced.

Coupons will be good on the following dates: May 3 and 10, 8 p.m.; May 4 and 11, 8 p.m.; May 6 and 13, 5:30 p.m.; May 7, 5:30 p.m.; May 8, 8 p.m.; and May 9, 8 p.m.

NRC Travelers All Ready for Hawaii Tour

The NRC Travel Club's Hawaiian summer holiday approaches, it is announced by Howard Cornelius, Travel Club commissioner.

The tour of the islands will be May 27 through June 9. Cost will be $398 each.

Travel Club Norcrafters will visit the islands of Hawaii, Kauai, Maui, and Oahu with many excursions in all localities.

The European fall holiday is firm for September 30 through October 30. This 30-day jaunt will take Norcrafters to England, Holland, Germany, Switzerland, Italy, France, and Monaco.

To help make the coming season more exciting, the Travel Club will hold its annual dinner Friday, April 21, at the Five Torches Restaurant, Imperial and Crenshaw.

Now forming
Summer Bowling Leagues
•
Softball Slow Pitch Tourney
Entry forms in Personnel Activities.

Softball to Start Slow Pitch Play

Important doings in softball!

Last night, April 11, a managers meeting took place at the NRC Clubhouse at which equipment was distributed and league organization discussed.

Big announcement is a preseason 16 inch slow pitch tournament to be held at Lennox Park on Tuesdays or Wednesdays and at Rosecrans Park on Wednesdays. Starting date is one week hence, April 19, 7 p.m.

Team entries are asked to obtain rosters at Personnel Activities and return them completed by Friday, this week. Individual entries seeking a place on the team are asked to call extension 2784.

Trophies will be awarded to the winning team.

TRAP AND SKEET SHOOT APRIL 22 RANCHO ANGELUS

The trap and skeet fraternity has scheduled a trophy shoot for April 22, at the Rancho Angelus Gun Club, 19140 South Main, Gardena, it is announced by Bob Bagby, NRC Trap and Skeet Club commissioner.

Time of the shoot will be 10 a.m.

Features will be 2-man teams shooting 50 skeet and 50 trap targets. Each team will consist of a high handicap and a low handicap shooter. Drawing for team places will take place on the morning of the shoot.

Trophies will be awarded to first and second place team members.

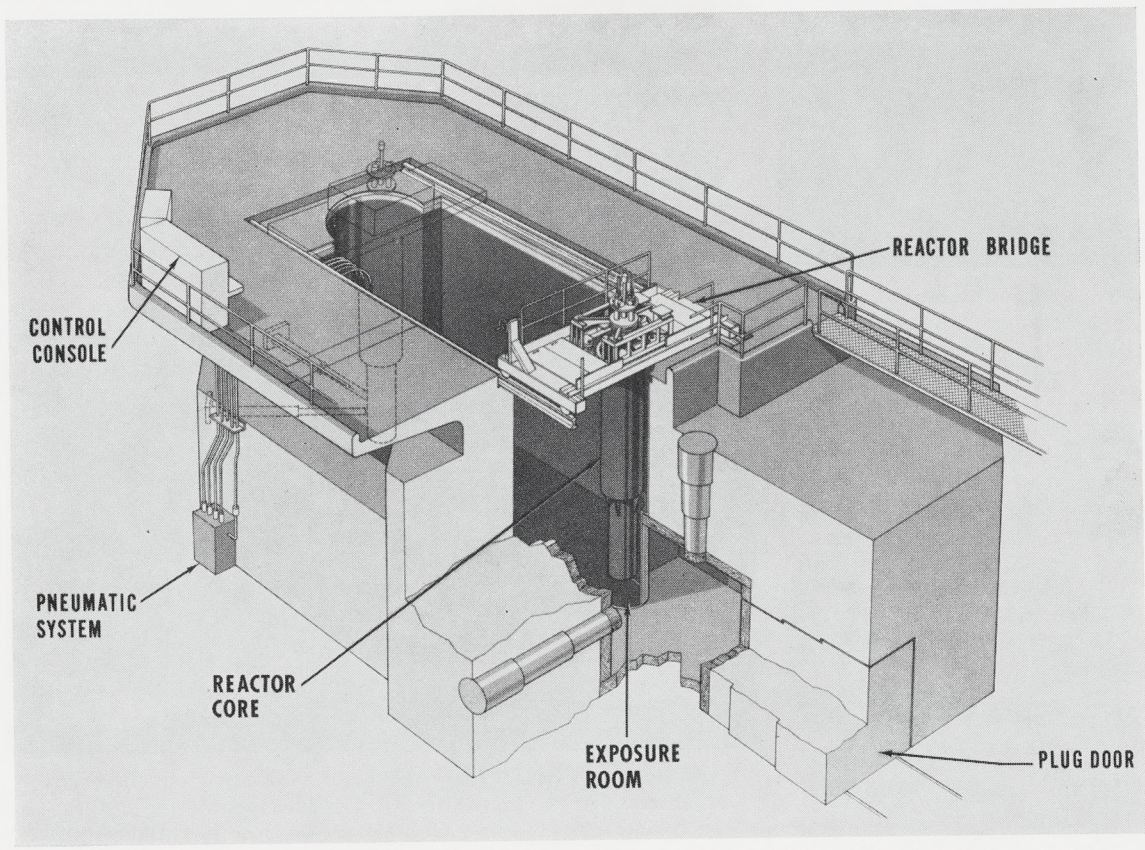
PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, April 26, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — RAPID CITY, EL PASO

NORAIR TO INSTALL TRIGA REACTOR



FOR SPACE RADIATION STUDIES—Cutaway view shows the major features of the Northrop Space Radiation Facility to be installed at Norair Division in Hawthorne. Heart of the facility is a TRIGA Mark-F research reactor developed by the General Atomic Division of General Dynamics Corporation. See story for special features.

SCIENCE STUDIES TO BE CONDUCTED IN SPACE RADIATION

Northrop Corporation has announced plans to install a TRIGA Mark-F research reactor at Norair Division to simulate radiation conditions which might be encountered by advanced space vehicles, their crews and equipment.

General Atomic Division of General Dynamics Corporation will provide the reactor.

The basic TRIGA is used in hospitals and on university campuses throughout the world. Norair will employ the Mark-F model in the Division's new Space Radiation Facility, where it will be used to study radiation effects such as might prevail in the vicinity of solar flares, the Van Allen radiation belts, or aboard nuclear-powered vehicles.

The $750,000 Space Radiation

(Continued on Page 3)

NEWS BRIEFS

NORAIR CENTRAL PARTS LISTING—Norair organizational task force, Chairman Jack Mannion, assistant to the General Manager, has established a committee for final implementation of central parts listing for the Division. Central parts listing is the initial step in Norair's Integrated Management Systems plan. Committee representation is from Materiel, Production Planning, Logistics, and Computing and Data Processing Services. Representatives from Engineering and Cost Estimating are on call.

(Continued on Page 3)

★★★★★★★★★★★★★★★★★★★★★★★★

DAYLIGHT S-T

Come next Sunday morning, April 30, at 1 a.m., daylight saving is in effect. Clocks should be advanced one hour.

All plants will operate on daylight saving time throughout the summer.

For travelers, it might be well to know that airlines convert to daylight saving, so do buses. Railroads, however, operate on standard time. Don't get left standing.

★★★★★★★★★★★★★★★★★★★★★★★★

Northrop Plans Expansion In Architectural Products

In a new move toward expansion of operations in the architectural metal and building products field, Northrop has entered into an agreement to acquire all the assets of Arcadia Metal Products of Fullerton, California, Thomas V. Jones, Northrop president, announced.

By combining operations of Arcadia with those of Acme Metal Molding Company, Northrop is to become one of the nation's most diversified pro-

(Continued on Page 3)

Major Clark Made AFPR To Northrop

Major Charles W. Clark, USAF, has been named Northrop Air Force Plant Representative, effective July 1, 1961, it has been announced.

Major Clark, from Convair-San Diego where he served as assistant AFPR, succeeds Colonel Harold T. Morris who is retiring from active duty on June 30.

Major Clark will be acting AFPR during the interim.

Colonel Morris has served at Northrop since November of 1958.

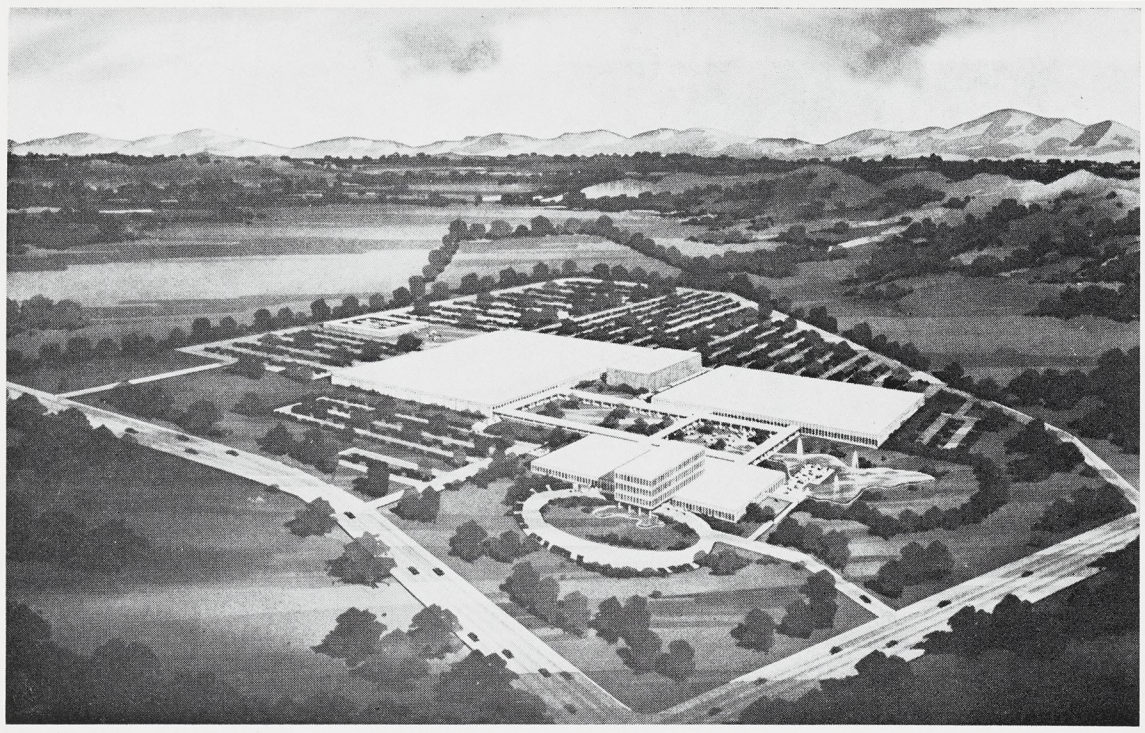
Major Clark, 41, a native of Missouri, graduated from West

(Continued on Page 3)

MAJOR CLARK

PRINCE BERNHARD—Prince Bernhard of the Netherlands, third left, who has 5000 pilot hours, visited Edwards and Palmdale last week, flew the Talon, praised the airplane for its maneuverability, performance. He is shown here with, from left, Northrop Corporation President Thomas V. Jones, Major General John W. Carpenter III, commander Air Force Flight Test Center, Edwards AFB, and Major Swart Nelson, T-38 Project test pilot.

NORTHROP MANAGEMENT CLUB — Official board of control family for 1961-1962 poses for photograph at first luncheon meeting. Seated, Mary Delaney, chairman, membership committee; Dona Page, treasurer; Ed Nolan, president; Howard Harlan, secretary. Standing, Leo Sacks, night shift vice-president; Tom Brazil, chairman, Junior Achievement committee; Al Binsacca, sergeant-at-arms; Stan Peterson, chairman, educational tours; Lou Bednarchik, chairman, dinners and dance; Bill Schramm, chairman, forums; and Ray Strong, finance. Not in photo, Dale Huss, vice-president; Jack Gibilisco, facilities, Max Windmiller, publicity; and Ed Laski, tickets.



RADIOPLANE—Master plan is completed for Radioplane's new Conejo facility. Construction completion is scheduled for late summer of 1962. New center will provide space for 3000 employees. Master plan calls for three major buildings, administration, engineering and manufacturing.

Detail Planning Now Underway for New Radioplane Complex in Conejo Valley

Northrop Corporation and Division management have approved the general features of the new Radioplane facility planned for Conejo Valley, it is announced by Northrop President Thomas V. Jones and M. W. Tuttle, Corporate vice-president and Radioplane general manager. Detail planning is now accelerating with construction completion scheduled for the late summer of 1962.

Mr. Jones described the new Radioplane facility as a major investment in the future—part of a three-year $32,000,000 capital investment program which is currently being implemented by the Company.

The Conejo facility will secure considerable savings in tangible and intangible areas of operation, according to Mr. Tuttle. Among advantages that will place the Division in an increasingly competitive position are the effects of consolidation of facilities and organizations, reduction of overlapping functions, reduction of interplant transport costs, and multiplicity of stores, leasing costs and high costs of telephone external services between areas. Further economies will be obtained in coordination and the increase in effectiveness which is inherent in completely modern facilities—designed for Radioplane's specialized operations.

The master plan calls for three major buildings which will accommodate administration, engineering, and manufacturing with a total capacity for 3000 employees.

Bloodmobile Due Here on May 17, Call for Donors

The bloodbank mobile unit will be at the NRC Clubhouse, 175 North Hawthorne Boulevard on Wednesday, May 17, it is announced by Charles Boyle, supervisor, Personnel Activities.

Hours of the visit will be 7:45 a.m. and 12:45 p.m.

Norcrafter donors for this trip are being drawn from the Engineering Science Center, Plant One main building, Tooling building, and Assembly building and all Norair and Nortronics organizations at Pant Three and Nortronics Plant Two.

Transportation pickup locations will be from Plant One main lobby, Plant Two Nortronics main lobby, Plant Three Personnel Activities office and the Engineering Science Center lobby.

All personnel, whether donors or not, are eligible in time of sickness to draw blood without charge from the Northrop bloodbank.

Mr. Boyle advises that the bloodbank account is presently at a low number of pints. All those qualified to be blood donors are asked to participate to bring the bloodbank account back up to a comfortable margin.

Physical examinations are given all individuals by Red Cross doctors before blood is taken.

NORCRAFTERS AT T-2 CELEBRATE FIRST NRC DAY

Titan T-2 site Norcrafters celebrated their first NRC Playday, it is reported by Virge Maniago, Industrial Relations representative.

T-2 Norcrafters and their families spent the occasion at Lake Sheridan in the historic Black Hills of South Dakota.

Ice skating, sledding, fishing through the ice, plus a game of golf on ice skates were features of the day.

For the inner Titan man or woman, the Club furnished hot dogs, coffee, and soft drinks during the day.

Virge reports that the Club is virtually bursting at the seams. Activities now under way include a Bridge Club, Trap and Skeet, Gem and Mineral Club, Boat Club, Car Club, and two Bowling Leagues.

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NORAIR DIVISION

CHARLES BRADFORD, Editor

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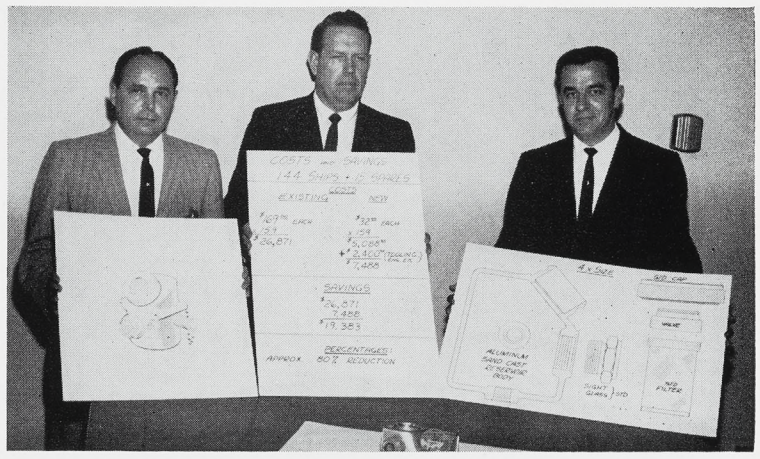
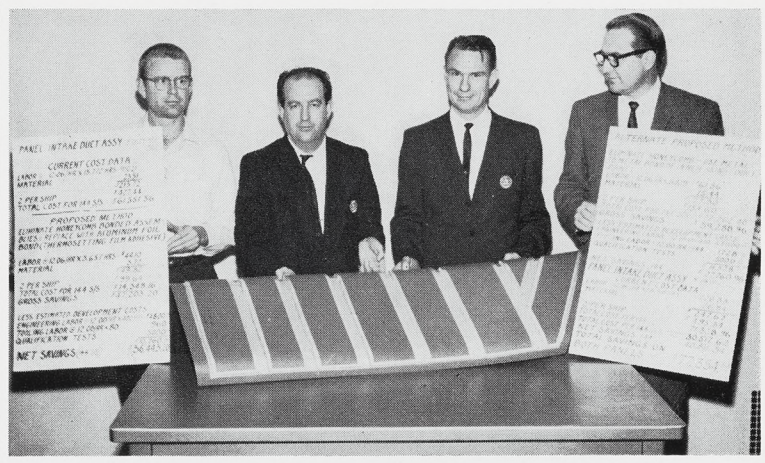
Value Know-how

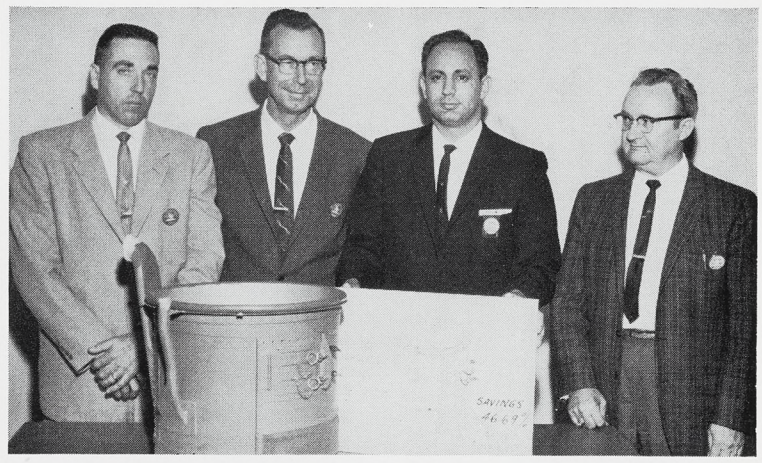
VALUE SEMINARS—First series of 10 half-day sessions on Norair Product Value Management is concluded with address by Bob Lloyd, vice-president, Manufacturing. Mr. Lloyd presented "diplomas" of value achievement to Norcrafter participants. Seminars were conducted by Ken Davidson, Value Analysis Services, Materiel. Second series of value seminars is scheduled for mid-May.



VALUE CASE HISTORIES—Seminar workshop concept was stressed. Those attending were from Engineering, Manufacturing, and Quality Control. Value teams were formed to actually apply cost reduction techniques. Here Dick Donnici, Purchasing; Stan Ryan, Mechanical Design; Ray Staley, Fabrication, brief seminar on their T-38 hydraulic brake reservoir value study. Team scored high with 81 per cent cost reduction on this item.



SIXTY PER CENT—Seminar team, Chuck Creasey, Controls Design; Earl Berry, Quality Control; Orie Reagan, Fabrication; Ron Klein, Tool Planning, came up with 60 per cent value savings plus two pounds weight on T-38 panel intake duct assembly.



FORTY-SEVEN PER CENT—This Value team, Bill Brooner, Tool Engineering; Norm Neibel, Advanced Production; Eli Welt, Engineering Liaison; Paul Shrimp, Cost Estimating, achieved 46.69 per cent savings on transition duct.

ENGINE BLEED DUCT—This team, Jack Hathaway, Tool Engineering; Bob Martin, Purchasing; Chris Besser, Fabrication, accomplished 39 per cent savings plus two pounds of weight on their value study of engine bleed duct. Seminar reported total value savings during the series of $175,626 for 144 ships.

Buy Savings Bonds

TRIGA Science Studies

(Continued from Page 1)

Facility is scheduled for completion in late 1961 or early 1962.

The reactor will have two special Northrop-specified features:

1. The pool of de-mineralized water which shields the reactor core will be oversized, so that capsules containing full-size missile and space vehicle parts and electronic systems can be immersed in it for exposure to radiation.

2. A large dry exposure room will be constructed adjacent to the reactor pool. This room will accommodate evacuated chambers for simulation of the vacuum of space. An aluminum window will separate it from the reactor pool.

In addition to studying the behavior of vehicle components, materials, and electronic subsystems when exposed to radiation, the reactor will be used for radioisotope production and for basic neutron physics research.

The reactor's movable core may be operated at any point along the 18-foot length of the reactor pool. The pool will be approximately 21 feet deep and 10 feet wide.

Radiation emitted by the TRIGA Mark-F is self-limiting because of the built-in safety characteristics of the TRIGA's fuel-moderator elements of uranium-zirconium hydride. These fuel-moderator elements are, in effect, a built-in control that automatically and instantaneously returns the reactor to normal operating levels following any rapid increase in power, even if external control devices are removed. Reactor personnel are able to work directly above the reactor top in complete safety.

TRIGA reactors are used by universities, hospitals and research centers in big cities and small towns on five continents.

AF Office

(Continued from Page 1)

Point in 1945 receiving a degree of Bachelor of Science in Military Science and Engineering. He was commissioned second lieutenant, USAAF, in 1945. He then served in Japan from 1946 to 1948.

Following this tour, he was sent by USAF to Stanford University for the period 1948 to 1949 where he received his Masters degree in Mechanical Engineering.

He was assigned to headquarters, AMC in 1950.

He has had 11 years experience in Air Force procurement and production. He is a senior pilot and will take an active part in flight accepting the T-38 Talon for the Air Force.

Major Clark is presently on the lieutenant colonel promotion list. His promotion is expected in the near future.

Major Clark is married and has three children. His family will continue to reside in San Diego until completion of the school year at which time they will establish residence in this area.

Campaign

LEND-LEASE — Don Kohler has been loaned by Northrop Corporation to the American Cancer Society for annual education and fund-raising campaign. Don is serving full time as a volunteer with the Society, calling on executives of large firms for the southern, southwestern Los Angeles and Crenshaw areas. Crusade ends May 5.

Arcadia

(Continued from Page 1)

ducers of architectural metal products. Combined annual sales of Arcadia and Acme are estimated at $10,000,000.

It is anticipated the acquisition will be completed by the end of May.

Arcadia Metal Products is a leading designer and producer of quality architectural aluminum products. Arcadia sliding glass doors occupy a well recognized position in this field and the company is now producing in addition a line of architectural sun control under the name of "Brise Soleil" plus prefabricated window wall systems. Arcadia products are sold in all major U.S. construction markets through a nationwide network of distributors.

Arcadia's product line and capabilities complement those of Acme Metal Molding Company. Acme is the West's leading producer of quality aluminum storefront and entrances. Acme distribution, though nationwide, is concentrated most heavily in the West, with international distribution in 27 foreign countries. Its headquarters and main plant are located at 5022 Triggs Street, Los Angeles 22, California.

Arcadia management was represented in the negotiations by Henry E. North, jr., Arcadia president and treasurer.

"This new acquisition will enable us to broaden our product lines and markets in the architectural metal and building products field," Mr. Jones said. "We have been highly pleased at the progress made by Acme Metal Molding."

TOP SPOT FOR NORCRAFTERS IN TENNIS LEAGUE

Norair's record in the current West Los Angeles Industrial Tennis League match is a clean nine wins, no losses, it is reported by John Potts, NRC tennis commissioner.

Norcrafter team members are John, Bill Lurie, who is also instructor, Bill Armstrong, Everett Jefferies, Don Theleman, Chet Druliner, and Jim Miller.

Firms in the industrial league include Douglas-Santa Monica and El Segundo; Space Technology Laboratories; Servomechanism; Hughes; and McCulloch.

Materiel Buyer Survey Shows That Small Business Is On Big Beam

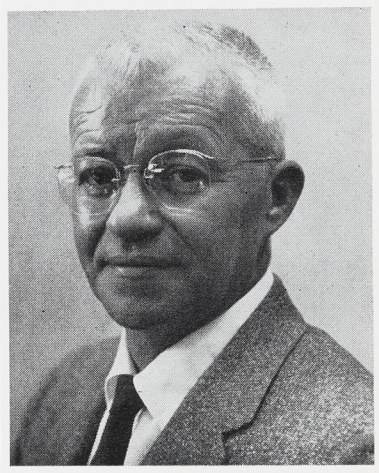
A recent small business survey conducted by Materiel in which Norair buyers anonymously answered questions pertaining to the smaller vendors and suppliers turned up interesting results.

An analysis of the survey by Carl Hood, Materiel director, reveals 91.4 per cent of the buyers give consideration to small business in initial bidding of possible sources. Seventy-five per cent further stated that this consideration affected eventual decisions as to selection of suppliers.

Norair buyers reported that their experience indicates small business, in product areas where they are competing, exceeds big business in ability to deliver, ease of price negotiations, and willingness to exert extra effort.

The buyers reported no difference between big and small business in the factors of quality, accuracy of information, supplier change requests, miscellaneous clerical irregularities. Buyers also expressed the opinion that Norair's present internal small business buying program provides sufficient emphasis to the importance of small business.

All buyers felt that Norair's small business program should be publicized to a greater extent.



CARL HOOD

In a summary discussion, Mr. Hood reported that approximately 90 per cent of Norair suppliers are firms which fall in the small business category.

Three out of every four purchase orders are awarded to small business.

Fiscal year 1959-60 commitments to small business amounted to 56.9 per cent of all Norair business dollars placed.

NEWS BRIEFS

(Continued from Page 1)

Chairman of the group is Frank Albrecht, Administrative Services. Under the IMS plan, parts listing would be centrally automated. Elimination of separate listings by separate plant agencies which entails as much as fivefold duplication is one of the goals.

Washington (AFNS)—USAF has developed an atomic clock so accurate that it is estimated it will not exceed an error of one second in 1271 years. The super tick-tock, technically called an Airborne Atomic Frequency Standard, uses atomic energy as its power source and is the first of its kind ever developed.

TECHNICAL SESSIONS—The first of a series of Norair management discussion conferences on the physical sciences and advanced technologies was completed last week. (See News Briefs, 21 December 1960.) First meeting of second cycle series starts tomorrow. Speaker will be Dr. Samuel Herrick, professor of astrodynamics, UCLA. Dr. Herrick's address will be entitled "Introduction to Outer Space." Meetings will be held Thursdays at the Engineering Science Center and will continue through 27 July. Second meeting, 4 May, will be conducted by Dr. Ludwig Roth, director, Research section, on "Introduction to Technologies and Environments of Importance to Norair Research." In the weeks following, speakers will include Royal Jackman, George Grogan, N. V. Petersen, and Roger Sampson. A panel discussion on "Space Operations" is scheduled for 25 May by Drs. Lindberg, Lombard, and Wells. Dr. Milton Plesset, Caltech, will speak 1 June on "Systems in Radiation Environment." He will discuss nuclear radiation general effects; effects on vehicles in space and their ground support equipment.

CLASSES IN PRICES—Materiel Department, Carl Hood, director, has recently concluded an Advanced Negotiators Course in prices, costs, and contracts, it has been announced. The classes presented by Harbridge House, nationally known firm of management consultants, is thought to be the first time that any division of Northrop Corporation has conducted such training in the Materiel field. A second class is now being conducted for Materiel buyers and supervisory personnel in lateral Divisional agencies including Cost Estimating, Contract Pricing, and Accounting. The courses were arranged and coordinated by Norair Industrial Training, Tom Darden, general supervisor.

YOUR NAME IN LIGHTS—Suggestion Award Plan now features top winners for quarterly periods in lights. Here Norcrafters Herschel Scarberry, Charles Hutchsen, Larry Foulien, and Joe Mazini, pause to read about the men who were awarded $2194 during January, February, March. Winners were Thais, $238; Holt, $1144; Hawk, $812. April, May, June suggestion names in lights will go up in July.

CHILD CENTER TO BENEFIT BY SPAGHETTI FEED

That good spaghetti! May 6.

Saturday evening, 5 to 7:30 p.m., spaghetti will be put to a special use in being the dinner that supporters of the Hawthorne Child Care Center will eat as they meet to raise funds for playground equipment.

The dinner will be held at 150 Washington — at the corner of 129th and Washington in Hawthorne.

Everyone is invited. The dinner is 75 cents for grownups, 50 cents for those of us under six. All money received will buy equipment for the center.

T-38 TALON TO STAR ON KCOP'S ADVENTURE SHOW

The T-38 Talon will star on Dr. Martin Klein's Adventure Tomorrow TV program on Monday, May 1, it has been announced.

The program is KCOP, Channel 13, at 8 p.m.

Lew Nelson, Norair director, Flight Test, will appear with Dr. Klein.

The show will feature T-38 motion picture footage from first rollout to delivery at Randolph Field.

RIDES WANTED

7:30 a.m. — 4:15 p.m.

LENNOX & HAWTHORNE BLVD., Lennox. Carol Taylor, ext. 1708, OR 2-1881. 3

AVIATION & MANHATTAN BEACH BLVD., Manhattan Beach. R. M. Erin, ext. 1406, FR 9-1961. 3

AVIATION & MANHATTAN BEACH BLVD., Manhattan Beach. Marian Potter, ext. 2304, FR 9-4509. 3

PACIFIC COAST HIGHWAY & CRENSHAW BLVD., Torrance. Irene Zarsky, ext. 2735, DA 6-7305. 3

8 a.m. — 4:45 p.m.

DEL AMO & LAKEWOOD BLVD., Lakewood. Richard H. Payne, ext. 474, HA 5-8154. 5

BROOKHURST & KATELLA, Garden Grove. Charles J. Rose, ext. 1305, LE 9-3555. 5

DEVONSHIRE & BALBOA, Granada Hills. Paul W. Ankeny, ext. 2151, EM 3-0639.

RIDES OFFERED

8 a.m. — 4:45 p.m.

BROOKHURST & KATELLA, Garden Grove. Charles J. Rose, ext. 1305, LE 9-3555. 15

DEVONSHIRE & BALBOA, Granada Hills. Paul W. Ankeny, ext. 2151, EM 3-0639.

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

FORD STATION WAGON, 1950, wood panel, new tires, rear springs & shocks, r/h, $195. PL 7-4252. A

MOVIE CAMERA, Bolex, 8mm, B-8L turret, compumatic, elec. eye, w/F1.9 YVAR lens, carrying case, leather, $110; surfboards, 2, $80 & $50. DA 3-0979. A

BUTANE HOOKUP, for car, $150; trailer, teardrop-type, $150. FR 1-6758. A

SAILBOAT, Lightning class, Fiberglassed, epoxy finish, w/licensed trailer, $1145. OR 0-0539. A

LIGHT FIXTURE, for dining rm., rustic, $15; paint spray outfit, small modellers-size, $7.50; dbl. buffing head, Sears, $2. GE 1-4233. A

BICYCLE, Olmo Derailleur, 10-spd. Campagnolo gears, w/accessories. $80. TE 3-5769. A

AUSTIN-HEALEY, 1959, Red, deluxe roadster, $1995. ST 9-5791. A

SWING SET, $10; bathinette, $7.50; soft water heater, $25; training chair, $3.50. DA 4-6203. A

TRAILER, teardrop-type, w/butane tank, stove, icebox, mattress, $125. DA 3-7877. A

CAR, 3-wheel, gas powered, 25 hp, $35. OR 8-5934. A

AQUA-LUNG, U.S. Divers, 2 stage w/80 cu. ft. tank & J valve, $50; weight belts, 2, w/wts., $2 ea.; CO_2 gun, Western Jet, $3; wet suit, Neopreme, $10. FR 5-8278. A

HOUSE TRAILER, 1949, 27', furn., $500. TA 8-7106. A

STUDEBAKER, 1947, $75. FA 8-0450. A

PIANO, upright, $50. FR 2-7106. A

DRYER, Kenmore, gas, $50. FR 2-4318. A

DINETTE SET, table, 6 chairs, buffet, limed oak, $40. DA 4-7254. A

GAS RANGE, Wedgewood, $35. FR 5-9209. A

BOW, Apache 1960, 48-lb. center shot, $50. DA 4-7869. A

MOTORS, '53 Chrysler V-8, $75; Ford, 1952, 6-cyl., new rings, bearings & wrist-pins, $50. OS 6-3448. A

LUSCOMBE 8A, all metal, new license, tires, glass, upholstery, paint, 880TT, 350 SMOH, $1550. DA 3-4954. A

TRAILER AXLE, wheels, tires, springs, $35; stroller, Foldarola, $5. FR 9-1397.

CABIN, small, deluxe, on 5 acres, electricity available. $2650. FR 4-8317. A

RADIO, battery, portable, Harpers, w/batteries, cost $37.50; $15. OW 1-6378.

TWIN BEDS, w/mattresses & frames, foam rubber, $100. OS 9-4761. A

CAMPING TRAILER, folding-type, sleeps 4, butane equipped. $195. OS 5-2159. A

HEARING AID, Acousticon, small size, cost $300; $75. PL 2-8722. A

CLOTHESLINE POSTS, iron T, $2.50 ea.; shower aluminum, $10; cement mixer, $65; heating stove, oil-type, $12.50; well pump jack, $20; windmill pump & cyl., $10; gasoline post hole digger, $75; inside doors, $1 ea.; jet pump & access., $100. VE 7-4237. A

NRC BOAT CLUB TO REACTIVATE, MEET TONIGHT

A meeting reactivating the NRC Boat Club will be held at the NRC Clubhouse tonight, Wednesday, April 26, 7:30 p.m., it is announced by Sandy Friedfeld, commissioner.

The program will include the film "Rules of the Road" furnished by the Naval Reserve Training Center.

A discussion will be held concerning a Memorial Day cruise to Catalina Island or the inland waters.

All in attendance will receive a compass deviation chart. Former members are especially invited to attend.

FOR SALE

BOOKCASE, walnut, fits Mathis stereo, $65. WH 1-8637. A

REVOLVER, Iver-Johnson, .38 cal., 3¼" barrel, $10. FR 6-3981. A

PIANO, upright, $125; patio bell, 6", brass, $5; shoe skates, sidewalk-type, size 11, $2.50; baby bathtub, $2. DA 7-9084. A

TRAILER, utility-type, 4'x4'x7', $50; TV, 17", Zenith console, $25. PL 4-9131. A

BUICK SUPER, 1956, conv., full power equip., r/h, w/w, $795. OS 6-2383. A

WATER HEATER, 30 gal., $5; fireplace screen, $3. PL 5-4497. A

SILVERWARE, 1847 Rogers Bros., daffodil pattern, set for 8 w/extra serving pcs., $65. FR 6-8233. A

RECORD CHANGER, auto., Garrard RC-88, 4-spd., w/45 RPM auto spindle, $40. TW 3-9391. A

HI FI, VM portable, table, additional speaker w/enc., $75. HO 3-5496. A

HOUSEHOLD FURNISHINGS, couch & matching chair, $50. OS 5-1847. A

BREAKFAST NOOK & table, $20. DA 4-8663. A

HOUSEHOLD FURNISHINGS, cocktail table, white Formica top, 35", $20; washing machine, Kenmore, $15; dining room set, 5-pc., maple, $50. GA 4-3795. A

PONTIAC STATION WAGON, 1954, $250. OS 5-9092. A

BABY EQUIPMENT, crib, blonde, Storkline, deluxe $25; bathinette, green, Babyline, $10; boodle buggy, Welsh, 3-way, $20; teederbabe, jump seat & attachments, $5; chaise lounge, redwood, metal springs, $10; safety grill for station wagon back window, $7. DA 4-7043.

BICYCLE, boy's, 26", Schwinn, $20; sailboat, Sabot, Fiberglas, nylon sail, $180; Go-Cart wheels & steer. assembly, $12. DA 3-6717. A

WANTED TO BUY

AUTOMATIC WASHER, must be in good condition. PL 8-6890. B

DRAFTING MACHINE w/long arm. FR 2-6933. B

CHEST, 3 or 4 dwr., maple, PL 4-0639. B

CAMPING EQUIPMENT, sleeping bags, Coleman lantern & stove. EX 8-2488. B

FOR TRADE

INTAKE MANIFOLD & 4-barrel carb. for 1958 Thunderbird engine, trade for 2-barrel carb. & manifold for same. OR 7-5177. C

RENTALS OFFERED

APT., 1-bdrm., furn. or unfurn., $70 mo. & up. OS 5-9695. E

FOR SALE OR TRADE

CHEV. PKWD. STATION WAGON, 1959, 4-dr., pwr. steer., r/h, '61 tags pd., $1850 or trade equity for '56 Chev. pass. DA 3-7692. M

AMPLIFIER & AM-FM TUNER, Bogen Woofer, 15", crossover, $25 or trade for 20X binoculars. TE 1-5158. M

FREEZER, 21 cu. ft., chest-type, $125 or trade for piano. OS 6-5253. M

GOLIATH STATION WAGON, 1957, black w/red leather, sunroof, radio, w/w, $395, or trade for Cadillac. EM 3-0639. M

REAL ESTATE, 2½ acres in Joshua Tree, $1525, or trade for hi-fi tuner or amp. as down payment. OR 2-9008. M

CHILD CARE WANTED

ROOM & BOARD, 2½ hrs., 5-day wk., PL 6-2784. H

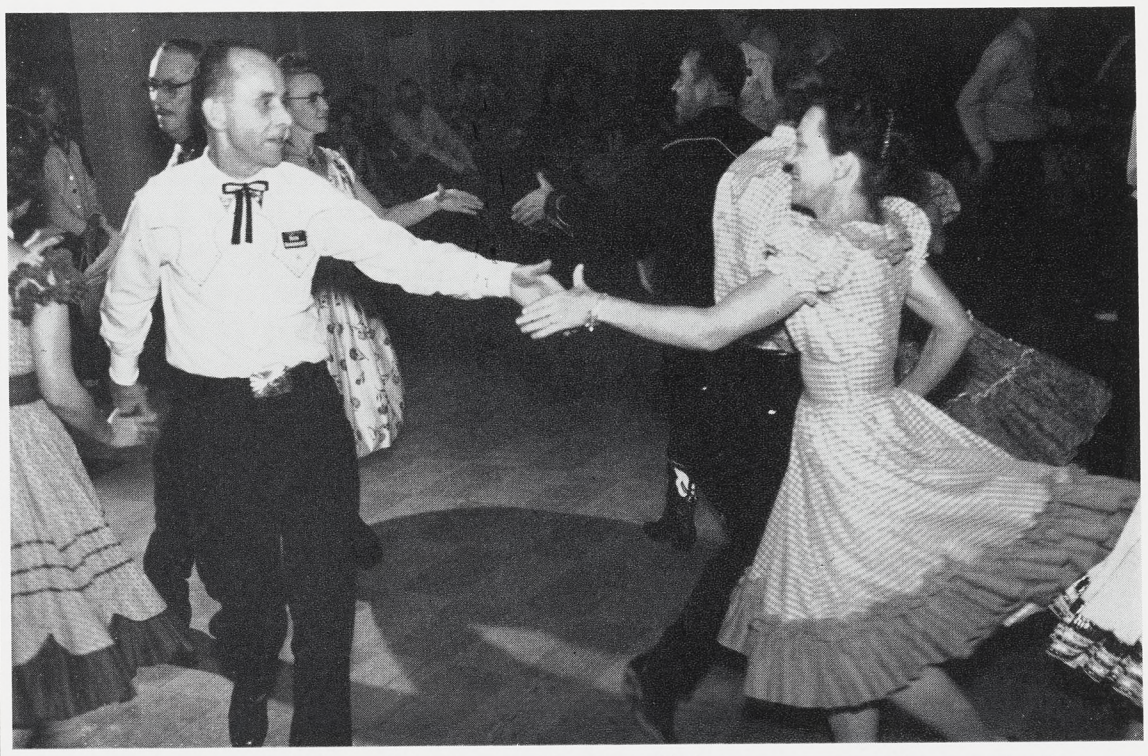
PERSONALS

INVESTMENT CLUB, wants to share cost & use of Value-Line Service w/another investment club. DA 9-6039. L

ORGAN INSTRUCTION for beginners & advanced students, modern rhythm, chording & styling. OR 1-8717. L

NRC Vignette #7

NRC Square Dancing



SQUARE DANCING—The NRC Square Dancing Club is a very active organization. Weekly meetings, classes for beginners, classes for advanced, are regular fare. All intricate sequences are taught. Callers are the best anywhere and have learned their routine with the NRC. Also, as part of the square dancing is occasional time out for other folk dance routines, waltzes, reels, schottische, varsovienne, mazurka, but "do-se-do and away you go" is mainstay activity. Photo shows a typical NRC Square Jet "square" in the process of an allemande left. Norcrafters in the photo are, front and counterclockwise, Dick Rinehart, commissioner, Jo and Ray Hoggerty, Ralph Hill, caller, Cora and George Sanborn. Beginners need never be afraid to join the Club. The callers are dedicated and fellow club members have great patience, for they too, were novices only yesterday.

Discount For Cinerama at P-A, Plant 1

Personnel Activities has reduced price tickets for special showings of Cinerama Holiday, it is announced by Charles Boyle, supervisor, Personnel Activities.

Prices are 90 cents for children and $1.20 for adults. Regular prices for Cinerama are $1.75 and $2.65.

The second Cinerama presentation of Cinerama Holiday opened an exclusive Southern California engagement, Tuesday, April 4 at the Warner Brothers-Hollywood.

The special reduced price rate will apply on Saturday, April 29, May 6, 13, 20, and 27. June 3, 10, 17, and 24.

There will also be a reduced rate showing May 30, Memorial Day.

Order special price Cinerama tickets at Personnel Activities.

Gem and Mineral Club to Present Series of Films

The NRC Gem and Mineral folk divide their hobby time between the desert and the city with an outstanding program being presented month after month.

Their latest attraction is a gem and mineral film series which will be screened at the Clubhouse on the last two Wednesdays of each month. Time is 7:30 p.m.

The first showing was last week. There is a showing tonight. The film program continues through September 20.

All Norcrafter friends and families are invited. Admission is free.

On the first evening, the membership was shown films entitled "Enameling on Copper"; "Geyser Melodies"; "Ghost Towns of the Mother Lode"; and "Glamour Fish of Hawaii."

Tonight, it will be "Story of Silver" and "In the Beginning." "In the Beginning" has to do with the Grand Canyon and what this great geological feature tells mankind about the earth's history, with spectacular re-creations of nature's three billion year drama.

Shows for coming weeks are:

May 24. "Chinese Jade Carving"; "Festival in Solvang"; and "Pack Trip in Glacier National Park."

May 31. "How to Have an Accident"; "Life in a Garden"; "Majestic Norway"; and "The Manufacture of Modern Coated Abrasive."

NRC Good Time Table for May

For enrollment or information on activities listed below, call or contact Personnel Activities, Plant One, extension 2784. All clubs meet at the NRC Clubhouse unless otherwise noted.

ART CLUB, Stewart Luce
Meets Thursdays, 7-10 p.m., Joe Kalina's Studio, 3234 W. 157th St., Gardena. Annual art exhibit entry deadline June 2.

BALLROOM DANCE CLASS, Wes Williams
Thursdays, 7:30-10 p.m. Newcomers welcome.

BIBLE STUDY, C. J. McGuire
Plant I—Daily, 11:30-12:15, Tool Design Bldg., 11-11:45, 5566 Conf. Room.
Plant II—Mondays & Thursdays, 12-12:45, Conf. Room 2.
Eng. Center—Daily 12-12:45, Reliability Conf. Room.

BOAT CLUB, Sandy Friedfeld
Meets 4th Wednesday, 7:30 p.m. Tentative Memorial Day Cruise.

BOWLING (days), Earl Saunders
Summer leagues forming.

BOWLING (nights)
Summer leagues forming.

BOY SCOUTS
Sea Scouts meet Tuesdays, 7:30 p.m.
Cub Scouts meet 4th Friday, 7:30 p.m.
Boy Scouts meet Thursdays, 7:30 p.m.

CAMERA CLUB (days), Howard Butler
Meet 1st & 3rd Wednesdays, 7:30 p.m.
Annual salon, May 17.

CAMPING CLUB, Fred Armstrong
Meet 1st Wednesday, 7:30 p.m.
Special movie "Southwestern Holiday,"

FISHING CLUB, Harold Rapella
Charter boats "Bolo" May 20, cost $10; "New Longfin" May 27, $12.

GEM & MINERAL CLUB (days) Bill Puniwai
Meets 2nd Wednesday, 8 p.m.

GEM & MINERAL (nights), Doyle Shook
Meeting place varies.
Meet 1st Wednesday, 1 p.m.

GOLF, John Banerian
El Rancho Verde, May 20, 21, 11 a.m., cost $5.50. Entries open May 8.

MIXED CHORUS, Ron Henderson
Meets Tuesdays, 7:30 p.m.

MODEL RAILROAD, Jack Wilson
Meet in Annex, Thursdays, 7-10 p.m. Visitors welcome.

RADIO CLUB, Paul Serafin
Meet last Thursday, 7:30 p.m. Radio code class meets Tuesdays, Wednesdays, Thursdays, 7:30 p.m. NRC's station is W6VPZ.

RIDING CLUB, Tex Statley
Breakfast ride, T and L Stables, May 7, 8 a.m. Meets 4th Sunday, Western Avenue Country Club, 4 p.m.

SKEET CLUB, Bob Bagby
Shoots alternating Saturday, May 6, 20 at Rancho Angelus Range, Main & Broadway, 10 a.m.

SKINDIVING, Ralph Gonzales
Meet 3rd Tuesday, 7:30 p.m.

SOFTBALL
League play, Lennox, Tuesday. Rosecrans Park, Wednesday.

SPORTS CAR CLUB, Lou Perry
Meet 2nd Thursday, 7:30 p.m.

SQUARE DANCING, Dick Rinehart
Henry Clay Jr. Hi, 124th & Western, Fridays, 8-11 p.m.

SURF FISHING, John Pawlicki
Meets 1st Tuesday, 7:30 p.m.

TENNIS, John Potts
Free instruction every Saturday, 10 a.m., at El Camino Jr. College. Indus. League play alternate Sundays.

TOASTMASTERS 212 (days), Jack Apodaca
Meet at Cockatoo Inn Thursdays, 6:30 p.m.

TOASTMASTERS 1398 (nights), Jay Rayner
Meet at Western Ave. Country Club Thursdays, 12:15 p.m.

TRAVEL CLUB, Howard Cornelius
Next meeting May 11, 7:30 p.m. Hawaii trip, May 27-June 9, $398. Deposit deadline May 1.

FOR THE LADIES

BOWLING (nights)
Summer leagues forming.

BOWLING (days), Corinne Davis
Summer leagues forming.

GIRL SCOUTS
Mariners, Tuesday, 7 p.m., Naval Reserve Center, 201 W. 126th St., Hawthorne, ages 13-18. All Norcrafter girls welcome.

KNITTING, Vera de Villiers
Meets Thursday, 7:30 p.m. Free instructions each meeting.

Northrop-Norair News
Norair Division
Hawthorne, California
Form 3547 requested

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PUBLIC SERVICE AWARD

Northrop-Norair News

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HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

Distinguished Visitors

ADMIRALS PIRIE AND STROOP—High Naval officers, Vice Admiral Robert B. Pirie, deputy chief, Naval Operations (Air); and Rear Admiral Paul D. Stroop, chief, Bureau of Naval Weapons; accompanied by Northrop Corporation Senior Vice-president Robert R. Miller, visited Palmdale facility, flew the T-38 Talon trainer. Here Admiral Pirie, after landing and still wearing flight gear, discusses airplane's performance and ease of handling with Mr. Miller. At left is Major Jim Anthony, Northrop deputy AFPR and T-38 project officer.

BUWEPS CHIEF—Here Admiral Stroop at conclusion of his flight, reviews with Mr. Miller the Talon's supersonic ability and safety features. Particularly noted was single engine performance and instructor—student pilot suitability. T-38 is now phasing into operations with USAF's Air Training Command at Randolph Air Force Base, will soon be training America's aerospace pilots of the future.

NEWS BRIEFS

LAMINAR FLOW CONTROL—Laminar Flow Control project continues on schedule, it is reported by Milt Kuska, manager, Laminar Flow Control Technological Airplane Project Department. Wing line lofting is under way. First tooling will be in the shop in 30 days. Wing designs are on the boards. Stress analysis of engine nacelles center body layout is in progress. Structural layouts of wing, fuselage, pylons, and nacelles are in process. Advance materiel requests have been received for wing extrusions and skin and vendors have been contacted prior to purchase order release for price and delivery dates. Mr. Kuska with Don Warner, director, Laminar Flow Control Engineering section, visited AiResearch-Phoenix, first company to have LFC subcontract, last week for tour and briefing of facilities. AiResearch will build LFC compressor system and drives. (See News Briefs, March 29, 1961.)

BUSINESS CLIMATE — John B. Clark, Norair director, Industrial Relations, has been appointed to serve on the Business Climate Committee of the Los Angeles Chamber of Commerce for 1961. Prime objective of the Business Climate Committee is to promote conditions conducive to successful industry and enterprise in Southern California.

NEW SPACE CONTRACTS

★ ★ ★

NASA Signs Norair for Space Work

Predicting how rocket fuel and other liquids will behave in weightless flight is one of the tasks required in a National Aeronautics and Space Administration contract granted Northrop Corporation Norair Division for "zero gravity" research.

The contract, awarded Northrop by NASA's Lewis Research Center, Cleveland, Ohio, covers a six-month investigation of the behavior and heat transfer characteristics of liquids in the weightless environment of space.

Dr. Elliot T. Benedikt, Norair physicist who is one of the nation's leading authorities on zero gravity hydrodynamics, will direct the contractual research for

(Continued on Page 3)

Edwards Chief Assigned to USAF Plans

Major General John W. Carpenter, III, Air Force Flight Test Center Commander since March 1959, has been reassigned as deputy director of Plans, Hq. USAF, an announcement from Washington stated last week.

General Carpenter came to Edwards as a Brigadier General after a tour of duty as assistant vice commander of the Air Research and Development Command, now the Air Force Systems Command, with headquarters at Andrews AFB, Md. He will depart Edwards mid-June, when he will take a short leave with his family before reporting to Washington, D. C., in July.

A successor to General Carpenter has not yet been named.

POLIO CLINIC SCHEDULED FOR MAY 11 AND 12

There will be polio clinics held at the Northrop Recreation Clubhouse tomorrow night and Friday night, May 11 and 12, it has been announced by Dr. R. J. Krebsbach, chief, Medical group.

Clinic hours will be from 6 to 9 p.m.

There will be a charge of $1 for each injection. Maximum charge for family is $5.

The clinics are being held in conjunction with the Hawthorne Junior Chamber of Commerce.

An additional clinic is being planned for June at the same location.

Norair medical personnel have volunteered to work at a July Junior Chamber of Commerce polio clinic to be held on the days of the Hawthorne Community Fair.

THE FUTURE BELONGS—

Extract from address by Lt. General B. A. Schriever, commander, Air Force Systems Command, to the Electronic Industries Association, Washington, D. C.

"In closing, I would like to leave you with one thought. The lessons of the past should make it clear that unparalleled opportunities await us in the age of space. I personally believe that the immediate future will be both the most exciting and most challenging era ever faced by man.

"It is an era ripe for progress, but remember the words of the slogan, 'The future belongs to those who prepare for it.'"

★ ★ ★

Space Gun Leads to Sealant R-D

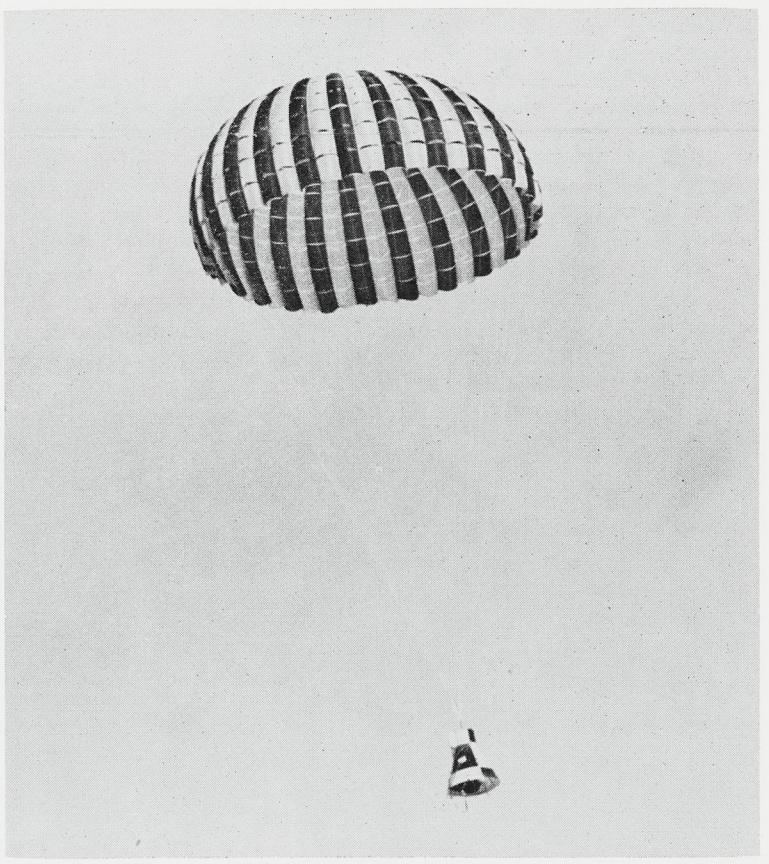
Norair Division has been awarded a contract by the Air Force Systems Command for research and development in "Sealant Application in the Aerospace Environment," it has been announced by George Mangurian, director, Technical section.

The work will be carried out under the direction of J. A. Van Hamersveld, general supervisor, Materials Research and Products Analysis.

The contract was a direct result of two years of Division-funded applied research on self-sealant systems for meteoroid

(Continued on Page 3)

Radioplane Ringsail



NORTHROP-RADIOPLANE RINGSAIL parachute played vital role in manned space shot last week. The system functioned perfectly, lowering America's first astronaut safely to the sea. Photo shows main chute in test with Project Mercury capsule.

Norair Hosts Air Force Institute of Technology

A two-day aerospace management symposium was held last week at Norair Division for 40 officers in the USAF's "Education with Industry" program.

The visitors led by Colonel John Tyler, dean, School of Engineering, USAF Institute of Technology, Air University, were briefed on company management philosophies and practices and took special tours of production lines and research projects.

Captains R. E. Griffin and I. Valdez, who are presently on "Education with Industry" tour at Norair, and H. G. Blocher, Division supervisor, Training and Training Equipment, welcomed the group and coordinated the program of events.

Company welcome was extended by Northrop Corporation Senior Vice-president Richard E. Horner. Mr. Horner, in outlining Northrop philosophy, stressed for his audience of future AFPR and key USAF procurement men the three salient points that serve to guide company concepts; (1) use

(Continued on Page 2)

Norair Norcrafter Daughters Win Corporation Merit Scholarships

Northrop Corporation Merit Scholarships for 1961 have been awarded to two brilliant students, daughters of Norair Norcrafters, it has been announced.

The scholarships went to Jo Anne Armstrong, daughter of John Armstrong, Electrical and Instruments, and to Lynne Anne Carmichael, daughter of Richard Carmichael, Structural Analysis.

Jo Anne is a student at El Segundo High School. She has her sights set on a teaching career by way of Occidental College and a history major. She has an academic record of straight A's.

Jo Anne's extracurricular activities include being president, secretary, patrol leader and delegate to the international roundup of the Girl Scouts of America. She is a member of the El Segundo Hi band. She has had two songs and one poem published. She has received freshman and sophomore achievement medals.

She is secretary to the Omnibus, school service club. She was an American Field Service Exchange student to Flensburg, Germany in 1960.

Jo Anne's younger brother John also has his eye on scholastic attainment. Law at Stanford University.

Lynne Anne Carmichael, a student at Narbonne High School in Harbor City, is also a straight A student. She also aspires to a teaching career and intends to major in education. By coincidence, her college plans are for Occidental.

Lynne Anne's activities include musician for Job's Daughters, president of the Inter-Club Council at Narbonne Hi, member of the student council, member of the Athletic association, the Philharmonic club, Baronettes, Ladies club, Jane Adams club and the Future Teachers club.

Lynne Anne has an older brother Dave now majoring in business administration at Long Beach State. She has a younger sister and brother, Leslie, 7, and Doug, 4.

Lynne Anne's mother, Edith, was a Test Lab Norcrafter during the time of F-89 production.

NORTHROP SCHOLARSHIP WINNER—Jo Anne Armstrong, at piano, daughter of Norcrafter John Armstrong, sitting next to her, is recipient of Northrop Corporation Merit Scholarship. Mrs. Armstrong and brother John are standing. Jo Anne is a straight A student, intends to be a teacher. She has had two songs, one poem published.

PROUD CARMICHAELS—Lynne Anne Carmichael, seated on dad's knee — he is Norair Norcrafter in Structural Analysis — also received Northrop Corporation scholarship. Lynne Anne's and Jo Anne's careers parallel. She is a straight A student, has outstanding musical talents, intends to teach, and like Jo Anne is headed for Occidental. Mrs. Carmichael, standing, is former Norcrafter.

Symposium

(Continued from Page 1)

of advanced sciences and technologies to obtain simplified solutions to defense problems; (2) to establish and maintain a broad base of prime, associate, and subcontract activity; and (3) a strong emphasis on management and operating efficiency.

DICK NOLAN

Corporate Vice-president and Norair General Manager Dick Nolan, in speaking of methods of management and the approach to assigned tasks, gave highest importance to proper communications, particularly in the successful management of the aerospace technologies. He paid high tribute to Division personnel. "Every member of our aerospace team," Mr. Nolan told the officers, "wants to do a good job.

"'Mental wages'," he said, alluding to job satisfaction, "are as necessary to welfare and morale as the weekly paycheck. One of the most important duties of management as we at Norair see it is to provide the proper tools so that a good job can be done."

It was pointed out that the need for a reduction in development time and an increase in productivity must be the mutual objective of industry and the Air Force.

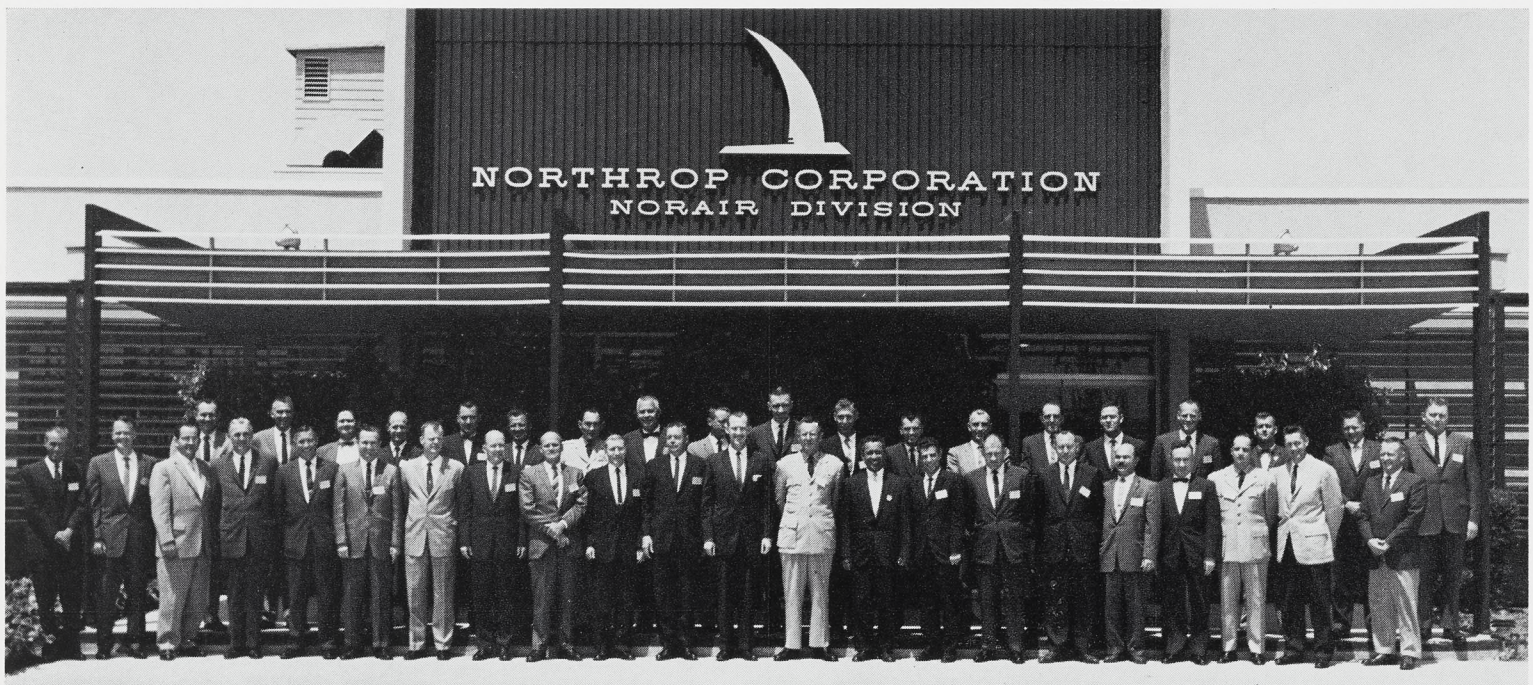
Reduction in development time can be accomplished only through a thorough understanding of Air Force requirements to ensure that our programs for the future provide a perfect match for these requirements.

Increased productivity, defined as better systems and/or components developed in less time that do a more reliable job for fewer dollars was explained as being achieved at Norair by knowledgeable management, good mental attitude and discipline, and by concentrated utilization of existing techniques.

The four techniques used at Norair to effectively achieve objectives: (1) Value Engineering. A first value look at the product both in the conceptual and detailed phase prior to release of engineering drawings and data; (2) Target Cost. A technique for measuring progress relative to cost in the design, fabrication and materiel areas, ensuring compatibility between contract requirements and actual performance; (3) Value Analysis. A second value look at the product by component and process, subsequent to release of engineering drawings and data; (4) PACE. A scientific, statistical measurement of group effectiveness.

TOOLS

Full scope of management tools and techniques as outlined also included Management Operations Report and Budget Review, Integrated Management Systems, Management Capability Improvement Program, Automated Operating Controls, Manufacturing - Engineering Savings Account, Organization Task Force, Division Plan and Management Planning Council.



USAF INSTITUTE OF TECHNOLOGY VISITORS—Norair was host last week to USAF officers in "Education with Industry" symposium. In photo taken in front of Administration Building, from left, front row, Majors J. W. Hunter and W. C. Sprinkle, Convair-Astronautics; Major C. R. Bond, Philco Corporation; W. H. Cone and Major J. D. Hiller, Philco WDL; Captain R. G. Haskins, North American; Captain R. F. Ambrose and Major C. V. Evans, Douglas; Captain W. E. Dibble, Thiokol; Captain L. F. Cannon, Lockheed; Major D. H. Faustman, North American; Captain R. E. Griffin, Northrop; Colonel John Tyler, dean, School of Engineering, Institute of Technology; USAF Air University; Captain I. Valdez, Northrop; Lieutenant R. M. Gentile, Aerojet General; Major J. H. Thacker, Convair-San Diego; Lt. Colonel Blair Hale, Thiokol; Major Martin Kahel, Convair-Astronautics; Lt. Colonel George T. Carr, Aerojet General; Major L. R. Wiggins, AF Institute of Technology; Lt. Colonel Jay Fisher and W. D. Kempter, Thiokol. From left, back row, Captain J. T. Williams, North American; Major R. P. Horn, Lockheed; Professor H. L. Myers, Institute of Technology; Captain J. A. Collins, Douglas; Major W. L. Flagg, Rand; Major E. A. Senkbeil, Hughes; Major Thomas S. Ford, Institute of Technology; Lt. Colonel Wm. J. Trigg, Hughes; Major E. J. Mason, Thiokol; R. H. Lee, Institute of Technology; Major E. W. Angelus and Captain H. O. Graham, Aerojet General-Sacramento; Major W. A. Doyle, Thiokol, Brigham City, Utah; Captain H. H. Conner, jr., Convair-San Diego; Major B. L. Green, Convair-Astronautics; Captain R. K. Garwood, Thiokol; Captain R. R. Cooper, Douglas; Captain J. C. Thompson, Lockheed-MSD; Lt. Colonel M. J. Clay, North American. Group, here for two days, heard briefings on Company management and operating philosophy, toured assembly lines and science research projects.

FRANK MAYER

Frank E. Mayer, Norair Methods Analyst, was recently appointed publicity chairman for the 1961 annual Western Systems Conference, scheduled for May 25 at the Statler-Hilton.

Mr. Mayer is the president of the Association's Inglewood Chapter, which he was instrumental in forming. The Inglewood Chapter, youngest of the Chapters in this area, meets monthly to confer on topics pertaining to systems and procedures as related to management.

LEO RICHMAN

Leo Richman, chief, Records Management, spoke before a joint meeting of the local National Office Management Association and the American Records Management Association in Los Angeles, yesterday, May 9.

Topic of Mr. Richman's address was "Reports Control—The Dollar Sign."

Northrop-Norair News

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CHARLES BRADFORD, Editor

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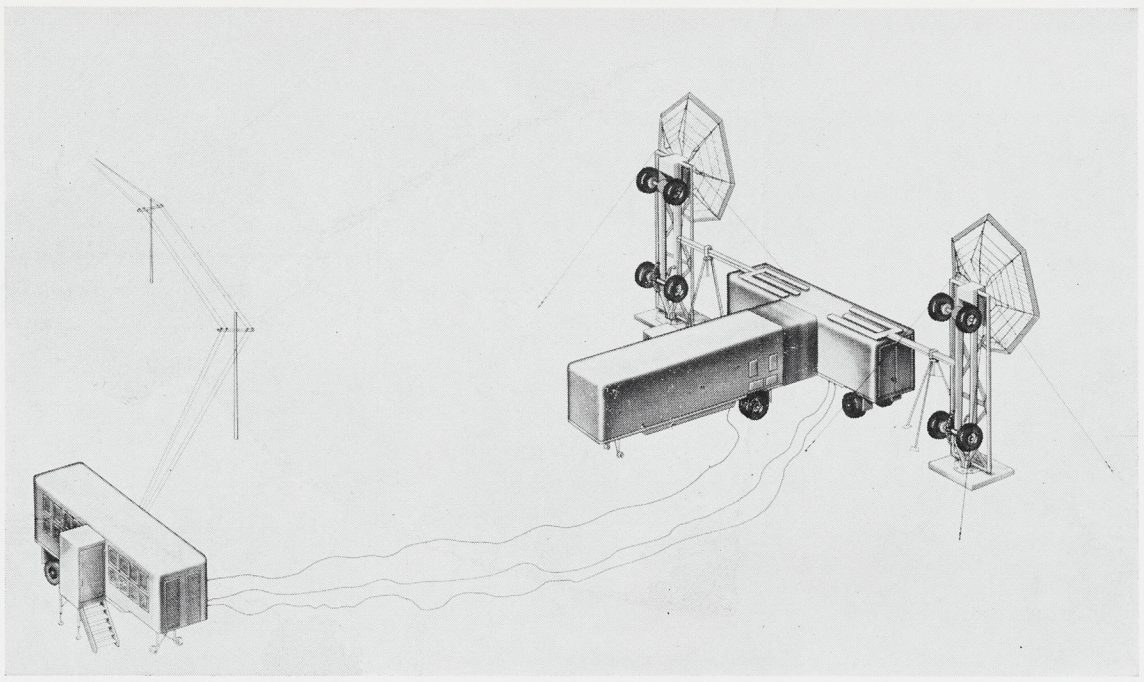


PAGE designs mobile tropospheric-scatter communications system for USAF.

NEW PAGE TROPOSPHERIC-SCATTER SYSTEM FOR AIR FORCE OVERSEAS

Page Communications Engineers has designed and is providing a completely mobile tropospheric-scatter communications system for the U. S. Air Force.

Designated the AN/MRC-85, each dual 10-kw, all-environment, vanized, tropo station comprises two 4-wheel trailers, with a 28-foot paraboloidal antenna mounted on each, and three 2-wheel semitrailer equipment vans. The stations, for USAF use overseas, are being assembled by Adler Electronics and ITE Circuit Breaker Company under subcontract from Page.

Two of the semitrailer vans house and transport dual 10-kw transmitters and associated equipment, parametric amplifiers, quadruple-diversity receivers, exciters, performance test equipment, voice and telegraph multiplex, signaling equipment, wire distribution frame, storage area, maintenance facility, transmitting and receiving filters with associated waveguide, and heating and air-conditioning units.

The third semitrailer houses two 150-kw diesel generators and associated switching equipment. This plant provides primary power with 100% standby to operate the terminal. It is designed to use commercial power where available. If the commercial source fails, either of the van-mounted diesels will automatically supply power within 8 to 12 seconds. Heating equipment and collapsible fuel storage tanks are also housed in the power van.

Each of the two 28-foot paraboloidal antennas is designed so that the entire unit stows on its own trailer without crating. The antennas are carried in "pie-slice" sections and are assembled in the field on the trailers in a very short time. The trailers are upended to form the towers supporting the antennas.

The AN/MRC-85 is a complete communications station transportable over highways or cross-country terrain and is designed to operate under extreme climatic conditions, from arctic cold to tropic heat and humidity.

Sealant R-D

(Continued from Page 1)

penetration of space vehicle cabins.

Demonstrating the feasibility of the self-sealing concept, Norcrafters on the preliminary research were Arnold Tuckerman, Sealant and Elastomer group leader, and Victor Mizuno, both of Materials Research Laboratory, and Philip D'Anna, Structures Research. In the project, Norair developed a hypervelocity accelerator capable of firing a one eighth inch steel ball (simulated meteoroid) at 8000 ft/sec in air to 10,000 ft/sec in vacuum.

(See Norair News Space Gun story, June 22, 1960.)

The new contract will cover known problem areas in the use of sealants in space vehicles. There are five general areas of sealant applications to be studied:

Gas containment — pressurized cabins, seals for airlocks, entrance hatches, windows, cabling, plumbing, space suits, and capsule joints.

Pressurized equipment—"black box" gaskets, connectors, pneumatic valves, unions, glands.

Sublimation—vacuum welding and evaporation control.

Liquid containment—fluid storage, fluid transfer systems, and hydraulic components.

Self-Sealing — prevention of sudden decompression resulting from meteoroid penetration of pressurized cabins.

Space environmental hazards and the resulting effects on materials, which includes:

Vacuum—total lack of atmosphere which causes materials, including metals, to degrade or decompose by one or more of the mechanisms of evaporation, sublimation, or "outgassing." These effects can lead to failure of any part or component exposed to the vacuum.

Radiation—Solar protons, electrons, and cosmic rays which cause changes in the structure of materials. The most susceptible are the elastomers and chemical compounds, some of which are completely changed by irradiation, so much so that they can no longer function as seals or sealants.

Thermal effects—Heat exposures in space which tend to accelerate the effects of vacuum and radiation, and cold exposures which cause brittleness.

NASA

(Continued from Page 1)

NASA.

Much of the work which preceded the contract award was done in the Norair "zero gravity" tower developed by Dr. Benedikt at Hawthorne.

Initial phase of the contract calls for a series of lectures to the staff at the Lewis Research Center during which Dr. Benedikt will outline Northrop's work in such problems as storage and supply of fuel in missiles and other space vehicles under weightless conditions, behavior of liquid metals in space welding operations, as well as the cohesive and adhesive characteristics of other fluids in zero gravity environment.

Parsons New A-F Auditor to Northrop

Harold D. Parsons has been appointed USAF resident auditor to Northrop Corporation with offices at Norair, it has been announced.

Mr. Parsons succeeds former resident auditor John Neiswender

HAROLD PARSONS

who has been assigned to Douglas-Santa Monica. Mr. Neiswender served here for over 10 years.

Mr. Parsons is a certified public accountant and has been with the USAF Auditor General for more than 11 years. Most of his duty has been as a supervisory auditor at Western District Headquarters. He previously served as resident auditor at Douglas-Long Beach and more recently at North American Aviation's Space and Information Systems Division.

Mr. Marvin E. Anderson will continue as assistant resident auditor to Northrop.

Celebrities

GOLF CHAMPS AND THE T-38—The nation's outstanding golf celebrity, Arnold Palmer, left, and Norair Tech Rep Hank Waklee are photoed at Randolph AFB before another champ, the T-38 Talon trainer. Arnold Palmer is winner of every major golf championship at least once and is considered greatest pro golfer of today. Hank won 1959 Oxnard AFB tourney. Will try repeat at Randolph.

DEDUCT — Charley Eyres, Management Club president, 1960-61 signs first payroll deduction authorization for Northrop Management Club dues and dinners for one year. All M-C eligibles have now received forms for the new plan. States President Ed Nolan to members, "This is the easy way to participate in Club affairs. You won't have to dig down for dues or dinner. Already paid."

ART SHOW REGULATIONS

PURPOSE

To encourage and stimulate the artistic endeavor of Norcrafters; to provide the opportunity for talented Northrop amateur and professional artists to exhibit their works publicly; to provide suitable awards in competition.

DATE

Entries will be accepted between May 15 and June 2. Paintings will be exhibited in the following locations: Plant Three cafeteria—Nortronics ES&E—June 5-16. Plant One cafeteria—Norair—June 19-30.

ELIGIBILITY

Competition is open to all Norcrafters and their immediate families. Entries submitted by those eligible will be divided into two classifications:

Class A—Amateurs—Those eligible who have not received money from the sale of artwork of any kind.

Class B—Professionals—Professionals or semi-professionals who have received money from the sale of artwork; Northrop personnel holding the classification of commercial artist, industrial artist or technical illustrator.

ENTRIES

Oil, watercolor, tempera, pastel or drawings in black and white or color. Portraits of administrative personnel cannot be accepted. Entry of any one artist is limited to three works.

Pictures must be original, not copies of other paintings or copies of photographs. Pictures entered in previous Northrop Recreation Club competition are not eligible.

PRESENTATION

All entries must be suitably framed and equipped with picture wire for hanging. Secure wire to frame firmly to insure the safety of your picture.

PRIZES

Winners in each classification will receive awards as follows:

Class A and Class B, first place, $75; second place, $50; honorable mention, $25.

SWEEPSTAKES AWARD

Norcrafters will vote for their favorite entry by ballot available in the cafeterias on the following dates:

Plant Three voting will be held June 16.

Plant One voting will be held June 29.

GENERAL

All entries, including prize winners and Sweepstakes Award winners shall remain the property of the entrants and will be returned to them at the conclusion of the exhibit.

RIDES WANTED

7 a.m. — 3:45 p.m.

LA BREA & COCHRAN, Los Angeles. Earl Comstock, ext. 527, WE 4-8890. 2

7:30 a.m. — 4:15 p.m.

PACIFIC COAST HWY. & AVALON BLVD., Wilmington. Sarah Albanese, ext. 1494. 3

8 a.m. — 4:45 p.m.

CRESCENT & VALLEY VIEW, Buena Park. James H. Gorman, ext. 2024, JA 7-8671. 5

KATELLA & HWY. 39, Anaheim. Richard Lenart, ext. 1837, TA 8-3403. 5

MANHATTAN BEACH BLVD. & INGLEWOOD AVE., Redondo Beach. Shirley Wilson, ext. 2024, FR 2-4291. 5

FIGUEROA & 79th ST., Los Angeles. Alma Miller, ext. 1982, PL 1-5667.

RIDES OFFERED

8 a.m. — 4:45 p.m.

CRESCENT & VALLEY VIEW, Buena Park. James H. Gorman, ext. 2024, JA 7-8671. 15

KATELLA & HWY. 39, Anaheim. Richard Lenart, ext. 1837, TA 8-3403. 15

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

REFRIGERATOR, Westinghouse, 7 cu. ft., ideal for apt., or mountain cabin, $60. FR 6-0746. A

STEEL GUITAR, elec., new pickup, w/ amplifier, $60. OS 5-0283. A

CAMERA, Exakta VX, w/5 interchangeable lenses, waistlevel & eyelevel viewfinders, bellows ext., carrying case, & other access., $275. AX 1-3531. A

KARMAN GHIA, '56 red w/black top, r/h, safety belts, w/w. new trans., $1250. TE 3-2984. A

SEWING MACHINE, Kenmore, head & motor, $25; ironer, electric, Speed Queen, $45; bicycle, 10" wheels, $9; chaise lounge, redwood, $8; sailboat, Sabot, Fiberglas, $180. DA 3-6717. A

GAS RANGE, Tappan, 4-burner, timer, broiler. $40-50. Box 1201 A

DESK, boy's, Formica-top, $5; chair, hard maple, $8; mirror, hard maple frame, $5; ax, $3; bench, upholstered, $2; pole lamp, floor model, black & gray, $3. OS 6-1404. A

SPORTS CAR, custom-built, Fiberglas body, 1958 Olds eng. & auto. trans., $900. OS 9-1698. A

POWER LAWNMOWER, Craftsman, 21" rotary, $45; sleeping bags, dbl., $12, 4 singles, $4; dining room set, Heywood-Wakefield, 6 chairs & buffet, $125. FR 2-0149. A

AQUARIUM, 10 gal., $40. OR 7-9498. A

BOAT, 14', Javlyn, glassed mahogany w/foam upholstery, trailer, Wallstrong, $499. FR 6-1833. A

REVOLVER, Colt .38-40 & box of shells, $60; set of Colliers Encyclopedia, children's volumes & bookcase, $200; vacuum cleaner, Lewit w/attachments, $10. TA 8-0746. A

KOOL KART, new wheels & tires, Power Products eng., $85. PL 6-5789. A

TYPEWRITER, Underwood std., $50; JACKET, grey, muskrat, size 12, $50. OR 4-7644. A

ACCORDION, 120 bass, Paragon-Morbidoni, 7 switches, 5 r.h., 2 l.h., w/carrying case, cost $575; $175. FR 4-8607. A

FORD TRUCK, 1954, F-600, 2-spd. rear end, 172" wheelbase, 8'x12', metal van body, new short block rebuilt, $800. DA 9-0469. A

GAS RANGE, chrome top, extras, $50. FR 1-1787. A

TRAILER, teardrop-type, opens into walk-in, w/stove, ice box, conv. sofa-bed, 12' ext. tent, $250. PL 2-7543. A

AUTO RADIOS, AM/FM, 6/12V, $65; Motorola, volumatic, pushbutton-type, for VW or Ghia, $25. PL 5-3571. A

KITTEN, SIAMESE, sealpoint, 8-wks.-old, female, w/papers, $25. OS 5-1842. A

RECORD CHANGER, Garrard RC-88/4, w/base, $50; cribs, maple, 2. $10 & $20; washing machine, portable, $15; rocking horse, $10; painted chests, 2, $10 ea. OR 1-9312. A

Spring Keg Tourney Set June 10-11

Entries are now open for the 1961 NRC annual spring bowling tournament. The event will take place on Saturday and Sunday, June 10 and 11, at Gardena Bowl, 15707 South Vermont.

There will be men's team, mixed men and women, mixed husband and wife doubles, men and women singles.

Fee will be $3 a person for each event. All events, $1.50.

The tourney is sanctioned by the ABC and WIBC.

Rules, regulations, and entry forms are now available at Personnel Activities.

GEM MINERAL TO FEATURE ULTRAVIOLET

Ultraviolet methods will be featured tonight at the NRC Gem and Mineral Club meeting, it has been announced by Bill Puniwai, NRC Gem and Mineral Club commissioner.

J. W. Mowery of Ultraviolet Production Company will present a lecture and display entitled, "Properties of the Mineral Light."

After the lecture, there will be question and answer sessions where Mr. Mowery will answer all queries pertaining to ultraviolet mineral identification.

The meeting will get under way at 7:30 p.m. at the NRC Clubhouse.

FOR SALE

CAMERA, Argus, 35mm, & slide proj. w/carrying case & 12 slide magazines, beaded screen, 40"x40", $90. DA 4-1876. A

BUICK SPECIAL, 1955, h/t, low mileage, $525. EX 7-3589. A

SKI BOAT, 14', Fiberglassed, Evinrude, fwd. controls, windshield, skis, trailer, etc., $350. OR 2-7628. A

BOAT, 14', 35 h.p., 1958, Evinrude, w/ trailer, steering, remote controls & windshield, $575. OS 6-7791. A

THUNDERBIRD, 1957, 2 tops, wht., $2500. FR 7-2676. A

HUDSON, 1953, 4-dr., needs battery & license, $50. OR 2-8629. A

MOTOR SCOOTER, Lambretta, $225. FR 5-8018. A

GASOLINE ENGINE, 2 hp, 2 cy. vert. shaft, $25; compressor, Cornelius, 3-stage, 2500 PSI, w/½ h.p. elec. motor & auto. shutoff switch, $100. OR 1-9558. A

LAWNMOWER, hand-operated, 14" wide cut, w/grass catcher, $5; sprinkler, Nelson Dial-A-Rain, covers 2500 sq. ft., $5. DA 9-9180. A

FORD PICKUP, 1956, ½ ton, r/h, $775. OS 6-6126. A

WASHER, auto., Kenmore, w/water level & temp. controls, $40. DA 3-6050. A

HI FI, 30W Arkay amp., Heath FM tuner, Garrard RC-88 changer w/diamond needle, 2-way speaker sys., black cabinet, modern style, $125. OR 2-8376.

RENTALS OFFERED

HOUSE, 2-bdrm., newly furn., 1½ baths, small pool, lge. fenced yard, water pd., in Palmdale. $125. EL 7-3440. E

APT., 1-bdrm., furn., util. pd., $85. FR 9-4517. E

HOUSE, 2-bdrm., $95 mo. FR 6-5733. E

APT., single, furn. w/util., $67.50. DA 9-5072. E

RENTALS WANTED

HOUSE, 2 or 3 bdrm., w/yard for 3 children, $90-$120 mo. Box 1202. F

HOUSE, furn., 3-bdrm. HE 7-3398. F

PERSONALS

WE WISH to express our deep appreciation for expressions of sympathy extended to us during the recent loss of our loved one. ENDA FULLER & FAMILY. L

FOR SALE OR TRADE

POODLES, min., black male turn silver, 3-mo-old, AKC, $100, $125, & $300 or will trade for items of equal value. NE 6-2705. M

NRC Vignette #8

NRC Softball

SOFTBALL—Long before major league baseball came to the Southland, softball was "big league" activity at Norair. (The Northrop Recreation Club was originally founded by staunch Northrop horse hiders to whom the diamond and the hickory were as necessary as meat and drink.) Today, as always, the Club furnishes umpires, bats and balls and a place to play, presently Lennox Park, where the league is about to get under way. This year the NRC will field about 10 teams. In addition to regular league play, the boys get together for preseason and postseason contests which all adds up to softball activity that extends for practically 12 months out of the year. Photo shows typical flip of the coin for who's up first, in this case, a game between Mariposa and the Mafia. Watching the coin, front and center, are Mac McConnell, Softball Club commissioner with jacket and patch; Curly Pierce, Mariposa manager; Tom White, umpire; Al Panella, Mafia manager. For team schedule information, Norcrafters should contact Personnel Activities' Don Greco, Norair's genial "Kenesaw Mountain Landis" of plant softball affairs. "Everybody is welcome to play softball," says Commissioner Mac. "If you are alone, we'll find you a team. If you are a team, we'll find you a league."

Ballroom Dance Instruction

Registration at NRC Clubhouse, Thursday May 18 at 7 p.m.

Call Personnel Activities Extension 2784

ALUMNI DANCE FOR OLD GRADS AT PALLADIUM

All Norcrafter Leuzinger High School alumni are advised that this year's dance is scheduled for May 27 at the Hollywood Palladium.

Tickets are $1.75 each and must be purchased in advance.

There will be a reserved section at the ballroom.

Spares Coordination and Records' Jack Jones, vice-president, Leuzinger High School Alumni Association, advises that tickets and additional information on the dance are available at Personnel Activities, extension 2784.

HYPERSONIC W-T JENSEN TOPIC AT ST. LOUIS

Paul F. Jensen, general supervisor, Norair Aero and Propulsion Sciences Laboratory, participated in the annual meeting of the Supersonic Tunnel Association on April 23-25. This year's meeting was hosted by McDonnell Aircraft Company in St. Louis, Missouri.

Mr. Jensen's presentation to the Association was entitled, "Northrop Hypersonic Wind Tunnel Facilities."

NEXT GOLF TOURNAMENT SCHEDULED AT RIALTO'S EL RANCHO VERDE CLUB

The next NRC golf tournament will be held at the El Rancho Verde Country Club at Rialto, it is announced by John Banerian, NRC golf commissioner.

The dates will be May 20 and 21. Starting time is 11 a.m. both days.

There is a limit of 14 foursomes for El Rancho Verde play.

Golfers are asked to sign up for one day of the weekend only. Entries are now open at Personnel Activities.

Cost will be $5 green fee plus the prize fund kitty of 50 cents each. There will be golf balls, golf caps and a low net trophy.

CAMERA SALON

The NRC Camera Salon will be held Wednesday, May 17, it has been announced by Howard Butler, commissioner.

The show will be staged at the NRC Clubhouse at 7:30 p.m.

Bowling at Dayton

DAYTON BOWLING MATCH—Northrop Dayton District office personnel recently challenged Wright-Patterson USAF T-38 WSPO to a scratch bowling match, it is reported by Dayton District office Norcrafter J. W. Reeve. Participating in the match from left, front row, are bowlers DeLuna, Kovach, Reeve, Captain Sollars, and Major Bomberger. Standing, Coates, Ripley, Bosworth, MacDonald, Breckenridge, and Colonel Van Bloom. The Dayton office lost to USAF but has already asked a rematch at "their alleys." And we are favored to win, says Dayton office.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation ○ Wednesday, May 24, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

Distinguished Visitor

SCIENCE VISITOR—The distinguished Dr. W. P. Jones, superintendent of the Aerodynamics Department, National Physical Laboratory, Teddington, England, pays visit to Norair's Dr. Werner Pfenninger, chief, Boundary Layer Control Research. Dr. Jones now at MIT on sabbatical, was in Los Angeles to deliver Minta Martin lecture. His field is in nonstationary aerodynamics forces, particularly in connection with flutter and related investigations.

NEWS BRIEFS

RAPID CITY — Norair's Vice-president Manufacturing Bob Lloyd and Jim Matthews, manager, Site Activation Department, met last week with The Martin Company Vice-president and General Manager Dr. Wm. L. Whitson and K. C. Tibbets, operations director of site activation, in Denver, journeyed from there to Rapid City to review progress and status of T-2 Site projects. During stay, they were honored at a banquet dinner by the Rapid City Chamber of Commerce . . . Results of recent Northrop Management Club elections at Rapid City: R. L. Branning, vice-president; A. E. Sandstrom, secretary; Fred Hertel, treasurer; Virge Maniago, sergeant-at-arms. Appointments: Jack Cushman, membership chairman; D. L. Sherman, program chairman . . . Richard E. Horner, Northrop Corporation senior vice-president and Mr. Matthews are scheduled to attend next Rapid City Management Club meeting in early June. Mr. Horner will be principal speaker of the evening.

PROJECT HYDRA—Northrop, for the past 10 months, has been actively engaged in a Division-funded prime role study of the Navy's Project HYDRA. Project HYDRA is a revolutionary new concept for the launch of large rocket vehicles. The study is being conducted by the Systems Analysis

(Continued on Page 2)

Security Matters Due For Increased Scanning

Tighter surveillance, and greater sensitivity to all matters of security is now required by the United States Government, it is stated by Norair Director, Security and Protection Services Paul H. Crews.

"Specific directions have not yet come from the Department of Defense," stated Mr. Crews, "but indications warrant advising all Norcrafters to be especially alert to, and give full compliance to, security regulations as specified in the Norair Security Manual and in our customer contracts.

"The administration feels," continued Mr. Crews, "that recent releases of military information in the nation's press may be damaging to national security. DOD has stated that more stringent requirements are being added to the Industrial Security Manual in areas including classification, destruction of classified material, incoming and outgoing

(Continued on Page 2)

James Gehrig Named Aide To Symington

Norcrafter James Gehrig has been invited to serve on the staff of United States Senator Stuart Symington of Missouri.

Mr. Gehrig, formerly supervisor, Strategic Systems branch, Systems Analysis group, has terminated his Norair position and will act as an aide to Senator Symington in defense and space

(Continued on Page 2)

Palmdale Pictorial

See Inside Pages

Talon Makes First Time Bow In Washington D. C.

The Northrop T-38, newest aircraft in the U. S. Air Force inventory, appeared in the Washington area for the first time as part of the Armed Forces Day celebrations.

Operational with the USAF Air Training Command since March, the T-38 is a twin-jet, supersonic, high performance "space age" trainer designed to fill the gap between primary trainers and the Century Series fighters.

Carrying a crew of two—instructor and student—seated tandem, the T-38 Talon operates at speeds and altitudes comparable to the Century Series fighters, despite its relatively tiny size. The Talon has a takeoff weight of 11,500 pounds, an overall length of 44 feet, a wing span of 25 feet 3 inches, and a height of 12 feet 10 inches.

The high performance trainer is powered by twin high thrust-to-weight General Electric J85-5 turbo-jet engines with afterburners, giving the Talon ability to fly well beyond the speed of sound (Mach 1). The twin-engine design of the T-38 effectively doubles the safety factor, since the Talon is capable of full operation with fuel, electrical and hydraulic systems working effectively, even in single-engine flight. The T-38 has a near vertical climb capability from sea level.

The T-38 is designed for flight training in supersonic flight, takeoff and landing techniques, multi-jet engine operation, aerobatics, night flying, instrument instruction and cross-country navigation. It has a range of more than 1000 nautical miles.

Four T-38's from Air Training Command headquarters, Randolph AFB, near San Antonio, Texas, participated in Armed Forces Day activities at Andrews AFB, near Washington.

Lt. Colonel Art Buck, USAF, of the ATC, was in command.

LFC AIRPLANE DETAILS RELEASED TO PUBLIC

Design details of the world's first airplane with air-inhaling wings for extended range have been disclosed by Northrop Corporation.

Redesigned by Northrop to demonstrate the Company's performance-stretching Laminar Flow Control (LFC) system under all flight operating conditions, two former WB-66D weather reconnaissance aircraft are being rebuilt by Norair Division in Hawthorne.

This three-year, $30,000,000 program is sponsored by the U.

(Continued on Page 2)

New Tool Adds Value Via PACE

Norair's PACE organization, D. N. Petersen, director, has developed a new management analysis method known as Adding Value, it has been announced by Bob Lloyd, vice-president, Manufacturing.

"The PACE system was developed in 1958 at Norair," stated Mr. Lloyd. "It came at a time when measures of group input were practically unknown, particularly in the aerospace industry. Today, less than three years later, PACE is accepted as a vital and important step forward in this field.

"Adding Value stems directly from PACE research. It is an adjunct to the proven concept of PACE. A new tool.

"It will assist in controlling di-

(Continued on Page 2)

RATE RAISE

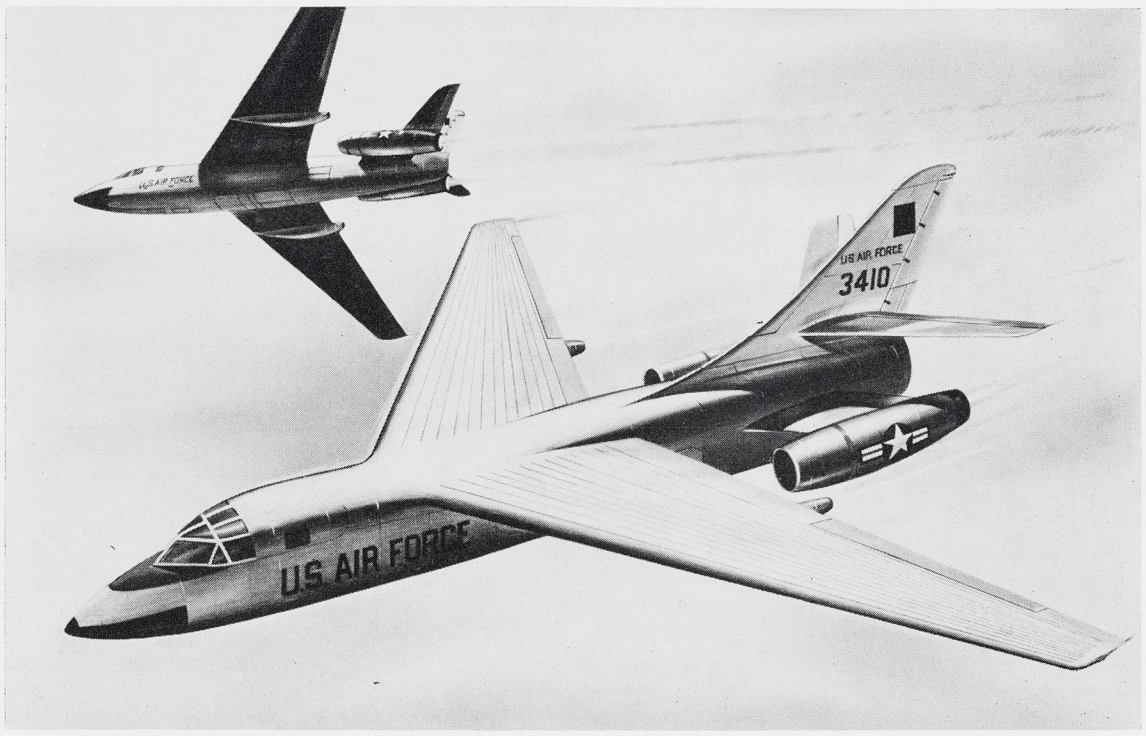
Hourly Norcrafters will receive a general wage increase of seven cents an hour, it has been announced by Corporate Vice-president and Norair General Manager Dick Nolan.

The maxima of the rate ranges will be increased seven cents an hour.

The increase, effective May 29, 1961, will apply to each hourly rated employee whose rate of pay is presently within the rate range for his occupation.

An announcement regarding salaried personnel will be made shortly, Mr. Nolan said.

Laminar Flow Control



LFC AIRPLANES—Artist's conception of two aircraft re-designed by Norair Division for flight testing Laminar Flow Control under operational conditions. Developed by Northrop under sponsorship of the U.S. Air Force Systems Command, the LFC method is designed to increase the performance of large aircraft by decreasing friction drag. Compressors mounted in the under-wing pods suck air through paper-thin slots in the extra-large wings to prevent turbulence in the boundary layer. This method is expected to increase the range, payload or endurance of large aircraft by 50 per cent.

NEWS BRIEFS

(Continued from Page 1)

group of the Advanced Systems section of Norair and includes system analysis, guidance and ship modification. Nortronics, Global Marine Exploration Company, and Holmes and Narver are participating as associate contractors. The study is being performed in coordination with the Astronautics Department of the Naval Missile Center, Pt. Mugu, California, and has been assigned a BuWeps project number.

Norcrafters Take Important Roles in IAS-ARS Meeting

Twelve Norcrafters have accepted important science assignments in the upcoming national Institute of Aerospace Sciences and American Rocket Society joint meeting to be held in Los Angeles at the Ambassador Hotel, June 13-16, it has been announced.

Leading Northrop participation in this gathering of aerospace scientists from throughout the free world will be Richard E. Horner, Corporate senior vice-president. Mr. Horner will be toastmaster at the luncheon meeting on June 14. He will also be chairman of the secret military systems program to be presented the following day, June 15.

Charles Eyres, assistant to the vice-president, Engineering, is general chairman of the conference.

Other Norcrafters active in the program from Norair are W. W. Harter, W. E. Cox, Welko Gasich, Lee Ohlinger, J. E. Wieder, Walter Darby, J. Patierno, J. Isca, William Chew, Alan Kidd, and L. R. Fowell. From Nortronics is Richard Towesly.

Add Value

(Continued from Page 1)

rection of input which has been increased by application of PACE. It will also be very effective in analyzing organization setup and systems and thereby result in improved management capability," Mr. Lloyd concluded.

The Adding Value program hinges on the concept of a product. In each plant organization the product can consist of material, systems, or service. The product varies from organization to organization. By analyzing factors which add value or fail to add value to each organization's product, Adding Value program provides management with a new measure of effectiveness of the group's input. Utilizing PACE program random sampling techniques, observations are made during the day in each group to appraise the number of personnel adding value to the product, and the number providing manual, visual, or oral support to that product. Data is compiled and published weekly with detailed analysis of areas for potential improvement of the level of Adding Value.

Adding Value target varies with the assigned task, some functions requiring more support than others. The objective is to provide maximum Adding Value consistent with the assignment. This is attained by supervisory awareness of the amount and type of support factors detracting from an organization's level of Adding Value. To the supervisor, increased Adding Value means more value per hour of work at the present rate of PACE input.

C. C. Kelber To Head New Science Lab

C. C. Kelber has been appointed supervisor, Military Space and Technology branch within Norair's Astro Sciences group, it has been announced by N. V. Petersen, chief.

Mr. Kelber is transferring to Norair from the Northrop Corporate Development Planning office where for four years he has been senior staff engineer in long-range planning reporting to Thomas V. Jones, president and chief executive officer.

"Hap" Herdrich Named Chairman of SAE Section

H. E. "Hap" Herdrich, assistant to the General Manager, Norair Division, has been elected chairman of the Southern California section of the Society of Automotive Engineers.

Mr. Herdrich will serve as chief executive officer of the SAE governing board. He will be responsible for the activity program which consists of eight dinner meetings where technical or general interest engineering papers are presented, two technical panel discussions or seminars, two plant tours, and an annual dinner dance.

"SPARTACUS" AT REDUCED RATES —PA OFFICE

Reduced price tickets for "Spartacus," the new Supertechnirama now playing at RKO Pantages in Hollywood are available through Personnel Activities, it is announced by Charles Boyle, supervisor.

The dates on which the reduced rates apply are the Sunday matinee, June 11, at 2:15 p.m. and the Sunday evening show, June 18, at 7:30 p.m.

Rates are good for all Northrop Corporation personnel from all Divisions.

Tickets must be ordered in advance on forms that can be picked up at Personnel Activities offices.

Security

(Continued from Page 1)

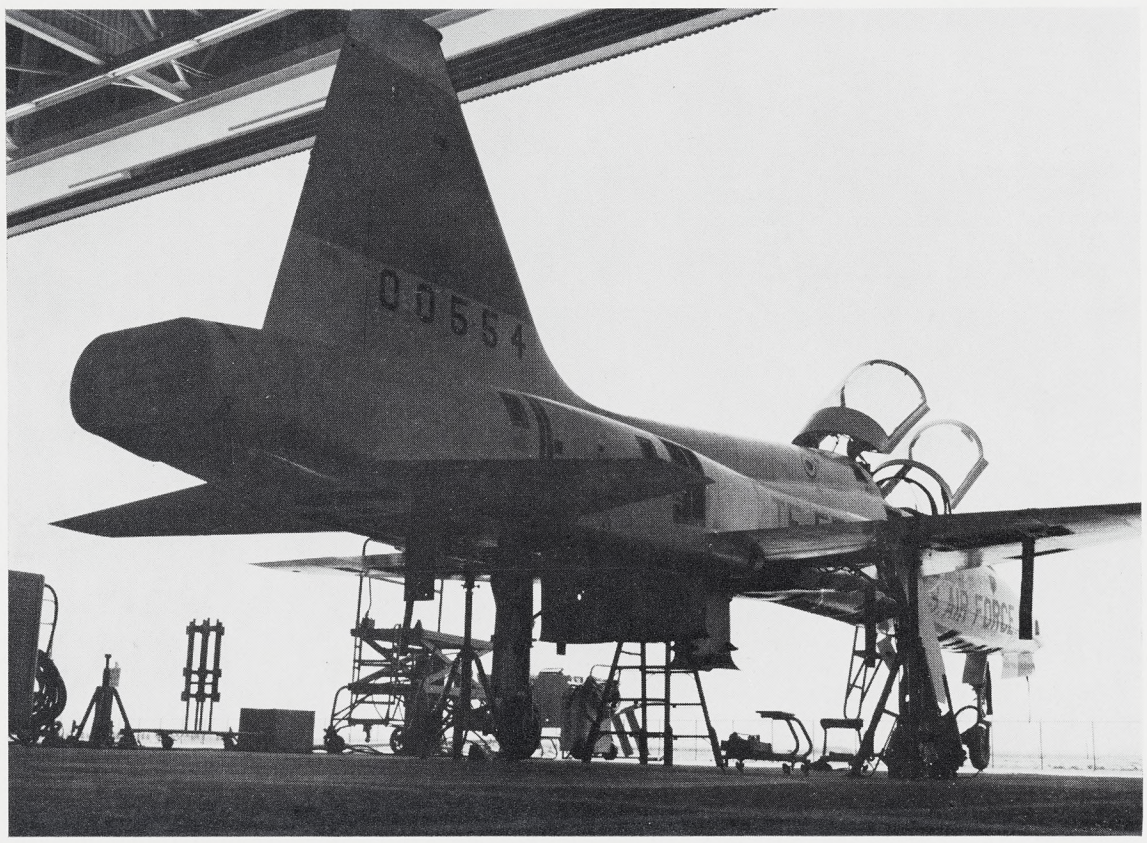
classified visits, reporting of lost classified matter and storage of classified material."

Forthcoming changes will be incorporated in the Northrop-Norair Security Manual as soon as received, Mr. Crews stated.

A plan for stepped up security indoctrination and education programs, as well as surveillance activities is under way by the Security group.

"Norair has a fine security record," concluded Mr. Crews. "It is of vital importance to the defense of our homes and our country that we never relax our vigilance."

PALMDALE TALON PR



PALMDALE NORCRAFTERS AND THE T-38 — A bran' spanking new T-38 Talon gets a first look at world horizons over which she will soon be flashing at Mach 1-plus in the job of training America's future aerospace pilots. From this point at the end of the Palmdale production flight line, airplanes go to the ramp and flight acceptance by the Air Force. Note engine tailpipes snugly covered. Spot photos from the production line, next page, help show how Talon is readied for flight from time of truck arrival from Hawthorne.

Laminar

(Continued from Page 1)

S. Air Force Systems Command.

Laminar Flow Control is expected to extend the range, flying endurance or payload of large aircraft 50 per cent or more without increased fuel consumption.

Northrop disclosed the LFC wing will be extra-large and the aircraft's twin jet engines will be mounted on the aft fuselage.

The slots are so fine that they cannot be seen from a distance of more than a few feet.

General Electric J-79 engines will be substituted for the aircraft's former J-71 powerplants. The engine nacelles will be mounted on the aft fuselage, a design feature of many of the newest transport aircraft including the Sud Caravelle and the Boeing 727.

Suction turbines will be mounted beneath the wings where the engine nacelles were located. The pumping system is being developed by the AiResearch Manufacturing Division of Garrett Corporation.

The research was directed by Dr. Werner Pfenninger, Swiss-born scientist who came to the U. S. in 1949. Dr. Pfenninger is recognized as the world's foremost authority in the field of low drag boundary layer control.

The Laminar Flow Control aircraft project is managed by Milt Kuska, manager, Laminar Flow Control Technological Airplane Project Department.

FOUR-DAY HOLIDAY

The weekend starting Saturday, May 27, will launch a four-day holiday for Norcrafters, it has been announced by Corporate Vice-president and Norair General Manager Dick Nolan.

All Division facilities will be closed Monday and Tuesday, May 29 and 30, in observance of Memorial Day.

Personnel will work the following Saturday, June 3.

NEW TELEPHONE SYSTEM LOWERS NORAIR COSTS

New telephone equipment installed in the Norair exchange is paying off handsomely in reduced cost, it is announced by Ted Gove, chief, Services group.

Cost savings are being achieved principally due to correct 8 and 9 dialing. With the former equipment, if 8 or 9 were dialed incorrectly, there was no check mechanism whereby Norcrafters could correct their error. With the new system, the recording advises when a mistake is made.

"Many Norcrafters were unaware of cost involved due to an incorrect call," stated Mr. Gove. "As an illustration: Fairfax or Frontier, if correctly dialed on the 8 line costs 5 cents for any length of conversation. If incorrectly dialed on 9, the cost is 15 cents each three minutes. In the case of Triangle or Overbrook, if correctly dialed on 9, the cost is 5 cents for any length of conversation. If incorrectly dialed on 8, the cost is 20 cents for each three minutes. In the Terminal exchange where 8 is the correct line, the cost is 10 cents for each three minutes but if incorrectly dialed on 9, the cost would be two and a half times as much or 25 cents for each three minutes."

The cost is different on 67 of the 89 exchanges in the Los Angeles area. With an average of 6000 calls a day averaging 10 minutes each, the possibility of waste is very apparent.

Dialing instructions are available in the form of a decal for attachment to telephone instruments. Decals may be obtained by calling extensions 505 or 2641.

Although the equipment is working remarkably well considering its electronic complexity, there are some bugs. These are being corrected rapidly. However, if trouble is encountered in placing an outside call it could be caused from one of four principle reasons: (1) Not waiting for the dial-tone before dialing; (2) dialing too fast; (3) using the wrong index number for the exchange being called; and (4) actual mechanical trouble. In any of these situations, at least two or more attempts should be made before reporting trouble. The operators are always glad to help.

Telephone Company operators, local and long distance, cannot be reached through the 8 or 9 level.

Gehrig

(Continued from Page 1)

with carry-over duties in foreign relations.

Senator Symington is a member of the following standing committees in the Senate:

Aeronautical and Space Sciences, Foreign Relations, and Armed Services.

Senator Symington is also a member of the joint committee on the Smithsonian Institute Museum building.

Northrop-Norair News

VOL. 19 No. 13

1001 E. Broadway, Hawthorne, Calif.
A NORTHROP CORPORATION PUBLICATION
Published every other Wednesday
NORAIR DIVISION

CHARLES BRADFORD, Editor

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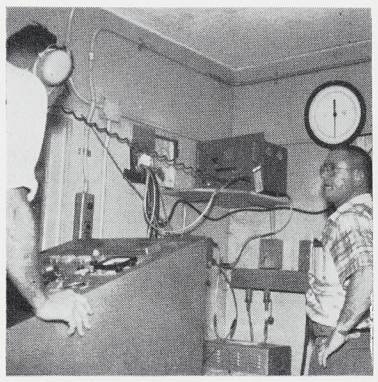
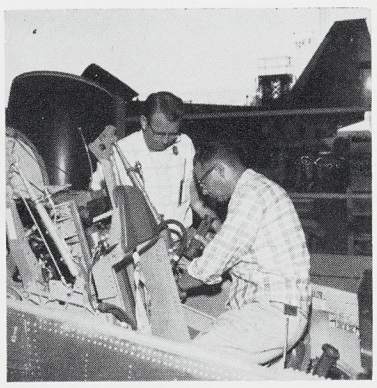
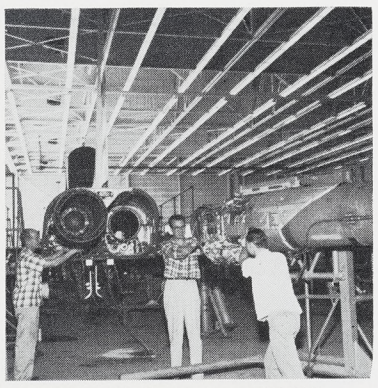
PRODUCTION FOR ATC



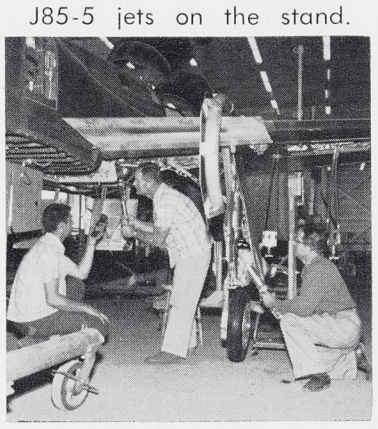
ENGINE—Here F. C. Laven, crew chief, and John Vilarino, flight line foreman, check one of Talon's GE J85-5 jets on the stand.



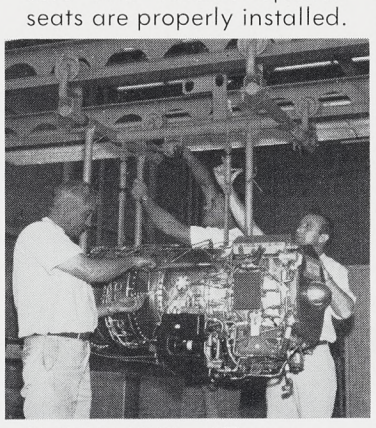
SEATS — Garey Rickher, Quality Control, and C. E. McGuire, mechanic, make sure that Talon's ejection seats are properly installed.



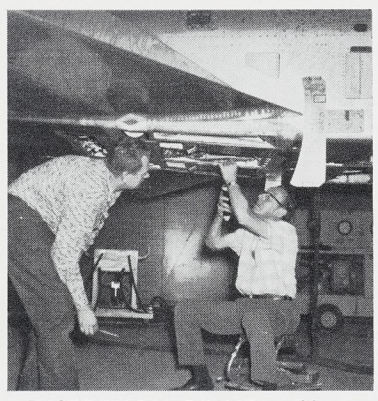
T-38 GETS HER POWER— Engines are dollied into position by Wayne White, checkout; Ben Lillard and K. D. Landis, mechanics.



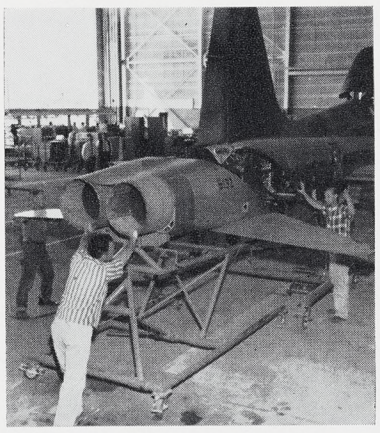
ON ARRIVAL — Wings are installed and torqued, hydraulics made ready. From left, mechanics Chuck Hamilton, Cliff Wooldridge, and Sam Dimitry. This is the first station. Airplanes are brought in from Hawthorne by truck.



ENGINE LINE—Efficient suspension system and proper working heights are illustrated on Talon engine line. Left, Jack Hendricks, engine mechanic; Glenn Thomason, foreman; R. E. Eckerson, engine checkout.

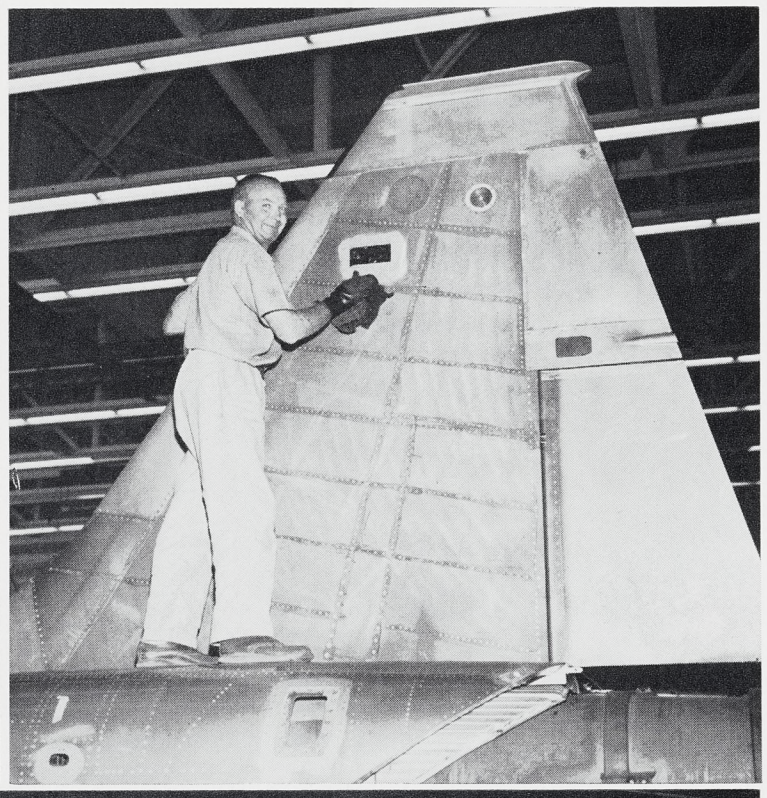


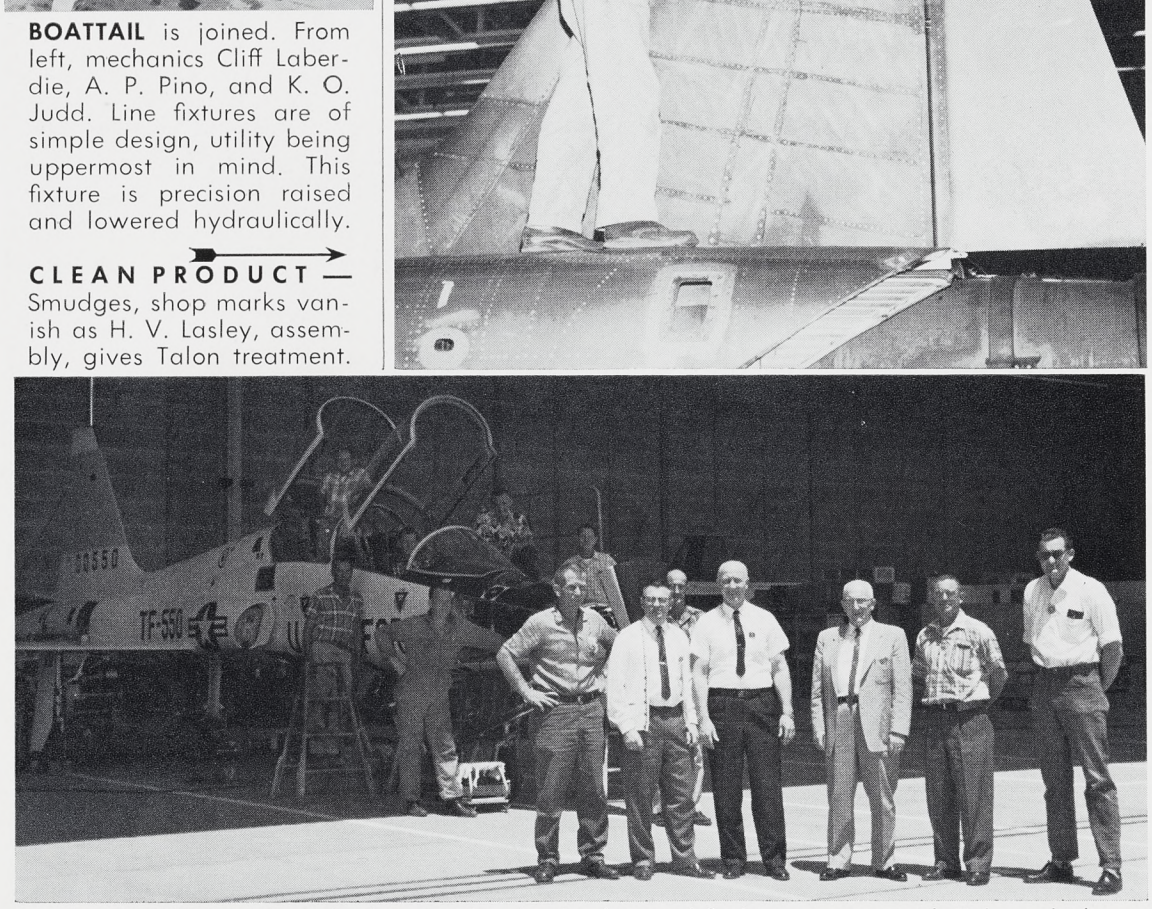
INSPECTION POINT — Horizontal stabilizer rigging gets thorough checking. From left, Orville Nelson, mechanic, and Ed Simkins, Quality Control. Note special working stools that allow men to work comfortably, efficiently.



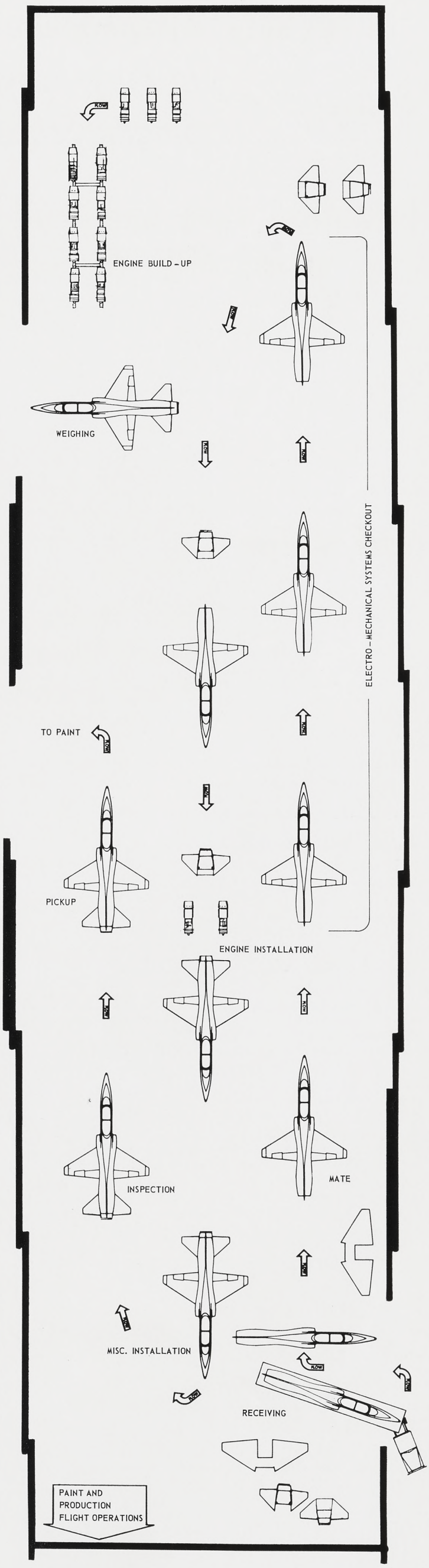
BOATTAIL is joined. From left, mechanics Cliff Laberdie, A. P. Pino, and K. O. Judd. Line fixtures are of simple design, utility being uppermost in mind. This fixture is precision raised and lowered hydraulically.

CLEAN PRODUCT — Smudges, shop marks vanish as H. V. Lasley, assembly, gives Talon treatment.





AT FLIGHT DOOR—Palmdale Facility leadership and flight crew men with Talon which will soon be ready for Air Force acceptance and supersonic in the wild blue. Front row in sunlight, Dave Hogarth, crew chief; C. M. Doumont, supervisor, Manufacturing Program Planning; Paul Minoletti, flight line mechanic (in background); A. C. Graber, general foreman, assembly and flight; Tom McCracken, base administrator; John Vilarino, flight line foreman; and F. C. Laven, crew chief. At airplane, J. R. Welch (on ladder) and Dean Nesland, flight line mechanics. Starting in rear cockpit, George McDowell, flight mechanic; E. N. Clipperton, C.C.; Ed Minghelli, Roy Babcock, flight mechanics.



TALON ASSEMBLY line at Palmdale. Aircraft arrive at north door via truck from Hawthorne. Fuselage, boattail and wings are the major shipping units. At end of line, Talon goes to paint, then comes back for weighing. After being weighed, she goes to final and to flight.

RIDES WANTED

7 a.m. — 3:45 p.m.

ROSECRANS & HIGHLAND, Manhattan Beach. Lorraine A. Andresen, ext. 2432. FR 6-9774. 2

COCHRAN & PICO, Los Angeles. Earl Comstock, ext. 527, WE 4-8890. 2

KNOTT AVE. & CHAPMAN AVE., Garden Grove. Anthony DeCarlo, ext. 1277, TW 3-6920. 2

7:30 a.m. — 4:15 p.m.

LENNOX & HAWTHORNE BLVD., Lennox. Carol Taylor, ext. 1708, 2418, OR 2-1881. 3

CRENSHAW & ARTESIA, Torrance. H. Miller, DA 4-5695. 3

CHAPMAN & HARBOR, Garden Grove. Elizabeth T. Schott, ext. 1965. 3

ARTESIA & PALO VERDE, Bellflower. Joyce Eubanks, ext. 2436, WA 5-2365.

PACIFIC COAST HWY. & 7TH ST., Seal Beach. W F. King, ext. 1305, GE 1-0789.

8 a.m. — 4:45 p.m.

LA BREA & 64TH, Inglewood. Celia Alper, ext. 1436. 5

INGLEWOOD AVE. & MANHATTAN BEACH BLVD., Lawndale. Glenneth Leeches, ext. 1372, OS 6-0900. 5

CALIFORNIA AVE. & IMPERIAL, Lynwood. Edna D'Vorkin, ext. 2151, NE 8-1413. 5

RIDES OFFERED

7 a.m. — 3:45 p.m.

KNOTT AVE. & CHAPMAN AVE, Garden Grove. Anthony DeCarlo, ext. 1277, TW 3-6920. 12

7:30 a.m. — 4:15 p.m.

PACIFIC COAST HWY. & 7TH ST., Seal Beach. W F. King, ext. 1305, GE 1-0789.

8 a.m. — 4:45 p.m.

LA BREA & 64TH, Inglewood. Celia Alper, ext. 1436. 15

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

BOAT, 16', Chris-Craft, fiberglassed past waterline, sleeps 2, 25 hp Johnson, trailer, $950. EA 2-4028. A

PUPS, Sheltie, (shetland sheepdog), from AKC registered litter, 6-wk.-old, fully weaned, very easy to train, females $50, males $75. OR 8-5958. A

HI-FI EQUIPMENT, exp. horn speaker encl. w/2 8" full range speakers, $40; amplifier, 25 w, preamp & FM tuner, $50. FR 9-5690. A

REFRIGERATOR, Commercial, 16 cu. ft., 2-dr., adjustable shelves, stainless steel forced air coil, stainless steel floor, $150. AX 1-9236. A

DODGE, 1947, 4-dr. sedan w/fluid drive, good tires, heater, $85. OS 9-6043. A

CEMENT MIXER, Homart, 2½ cu. ft., w/¼ hp motor & 10" hard rubber tires for hand portability, $99.50. FR 1-3769.

FORD, 1956, 2-dr. station wagon, r/h, auto. trans., power steer., $645. WE 4-8414. A

FORD, 1957, 2-dr. sedan, 6 cyl., $585. FR 4-8608. A

MATTRESS, queen-size, 84x60, cost $80, $30. EX 7-0431. A

BEDROOM FURNITURE, triple dresser, mahogany, plate glass mirror, lge. night stands, 2, bookcase headboard, $75. OR 2-2269. A

HOUSEHOLD FURNISHINGS, sectional, 3 pc., cost $330, $50; rest posture, Stauffer, $75. OS 6-4452. A

ANGLIA, 1958, low mileage, $650. WH 1-8637. A

UTILITY TRAILER, covered, 4x4x7, $50. PL 4-9131. A

TV, Dumont, 21", blonde console, $50. OS 6-6074. A

PIANO, upright, $135. FR 5-8847. A

HOUSEHOLD FURNISHINGS, coffee table & end tables, $15; rug, 9'x16', green; bedroom set, limed-oak, $65; curtain stretcher, $5; swing set, $10. DA 4-6203.

MODEL RACE CARS, 3, Thimble-Drome, gasoline powered, 2 w/engines, 1 w/o., $10; paint spray outfit, model-size, $7.50. GE 1-4233. A

CLOTHES DRYER, gas, $50. FR 2-4318.

Symphonaires In Busy, Busy Singing Sched

The NRC Symphonaires have been invited by Lloyd Stone, director, Los Angeles Bureau of Music to participate in the dedication ceremonies marking the opening of the new Los Angeles International Airport, it is announced by Ron Henderson, commissioner.

The event is scheduled to take place in late June. It will be of nationwide importance and attended by government and industry leaders and notables from throughout the world.

FOR SALE

GAS TANKS, Tempo long cruise, outboard-type, 12 gal., $28 ea. or $55 for both. FR 2-9354. A

GO-CART, MC-10, eng., racing slicks, $125. OS 5-8822. A

BICYCLE, boy's, liteweight, goosenecks, 26", $10; 24", $5. OR 8-5934. A

BICYCLE, 26", boy's, liteweight, $10, elect. motor, ¼ hp. $5. PL 7-2753. A

ENCYCLOPEDIA BRITANNICA JUNIOR, 1951 ed., $70. FR 4-6003. A

HI FI AMPLIFIER, Bogen RB115, 15W., $65. OR 2-9008. A

PLATE GLASS, 4'x6'x3/16", $10; solid pane windows, 2 pr., 3'x4', $5. OS 5-8413.

CEILING VENT FAN, 8", $10; spout sink faucet, swing-type, $7. OR 7-4256.

PLYMOUTH, 1953, sedan, newly overhauled, good trans., $350; sewing machine, elec., portable, $50. PL 3-7484.

SPORTS CAR, custom-built, fiberglas body, R & H, w/w, 1958 Olds eng., auto. trans., $900. OS 9-1698. A

HOUSEHOLD FURNISHINGS, range, Wedgewood, w/rotisserie, chrome top, $100; refrigerator, Admiral, w/freezer, $125; dinette set, 6-pc., $40. OR 8-3669.

ENCYCLOPEDIA BRITANNICA, 24 vols., $50. WE 5-0493. A

FURNITURE, divan club chair, dining table & 4 chairs, brass album holder, $150. PL 4-8957. A

CHAISE LOUNGE, redwood, $5; ironer, Speed Queen, $40; midget bicycle, $8; sewing machine w/buttonholer, $20; sailboat, Sabot, $180. DA 3-6717. A

T-BIRD, hdtp., 1958, Cruis-o-matic, r/h, w/w, air cond., $2400; house, 4-bdrm., 3 bath, $36,500. TE 1-1090. A

SPORTS EQUIPMENT, bowling ball, 16#, w/bag, $10; ski boots, size 8, $5. HA 1-2265. A

FURNITURE, coffee table, Nev-a-mar, walnut, w/2 matching end tables, $20; chair, Naugahyde, orange, walnut finish legs, contemporary-style, $20. EA 2-4293. A

2ND TRUST DEED, on 4-bdrm. Hollypark home, $400 discount, balance $3800 payable, $40 per month, 7.2% interest. SY 4-7855. A

WELDER, Hobart, 300 amp., 220-440 v., 3 phase, $175; elec. motor, 3 hp. 220 v., 3-phase, $25; electronic power supplies, 6-310 v., 20 microamps, $2.50 ea. NE 8-3131. A

CHEVROLET, 1948, deluxe sedan, r/h, fog lites, $100 TH 5-4490. A

FOR SALE OR TRADE

DODGE 6, 1957 pick-up, $950 or assume pymts. for small auto for equity. GA 4-6383. M

WANTED TO BUY

JEEP, military model, 4-wheel-drive, EA 2-1345. B

RENTALS OFFERED

SUMMER RENTAL, 2 blocks to beach, ocean view, 2-bdrm., furn., incl. dishes & linens. $100 wk. FR 4-8757. E

HOUSE, 3-bdrm., furn., near Northrop, prefer 1 yr. lease, $175. mo. PL 5-7310.

HOUSE, 2-bdrm., unfurn. $90.; bachelor apt., furn., $40., OS 6-6956. E

APT., duplex, water & trash pd., children & pets o.k., $65 mo. OS 9-5153.

HOUSE, 3-bdrm., South Torrance. FR 5-5667. E

RENTALS WANTED

HOUSE, 3-bdrm., w/yard & garage, 3 children. OR 1-1835. F

PERSONALS

ALTERATIONS. FR 2-3974. L

ORGAN INSTRUCTIONS, modern chords, rhythm, styles; hour or half-hour lessons. OR 1-8717. L

DRIVE 1959 Fiat to Washington, D.C. OR 1-9312. L

NRC Vignette #9

NRC Art Club

THE NRC ART CLUB exemplifies the modern industrial team approach to recreation, in this case on the cultural side. Membership is open to all Norcrafters. Only qualification is the desire to create pictures. Professionals, novices, students, all degrees of artistic ability are welcome. Members meet regularly, presently at Joe Kalina's house in Gardena where painting sessions are held with models furnished by the NRC. They also have field trips to local points of artistic interest, running the gamut of old red barns to Joshua trees and busy intersections. Art shows with member products on display are highlight activities with the big event of the year being the NRC Annual Art Awards Exhibit where paintings are hung in Northrop cafeterias to be judged by professional judges and fellow Norcrafters. Instruction, although not on a formal basis is available for the untrained, usually in the form of advice or a friendly word from the pros and other longtime members. Photo was taken at a recent exhibit by the Art Club at the South Bay Shopping Center. From left, front, members are Eleanor Ulaberry, Agnes Lloyd, an Art Club model, Ada Kalina, Jan Tempt, Joe Kalina, Bob Laina. From left, rear, George Ferrante, John Kayser, Jim Haddow, and Stewart Luce, Norair commissioner. If you have the urge to paint, the Art Club is your cup of tea. Participation is a stimulating and rewarding experience.

Norair Art Folk Win Top Honors

Northrop Corporation industrial artists, including many from Norair Division, scored handsomely in the current Eighth Annual TIMA Exhibit at Exposition Park.

The exposition continues through May 28.

Norair winners in the first award category were J. Schmidt, and J. Heltne, illustrated parts breakdown; and W. W. Hagemann, flight handbooks.

Second awards went to D. H. Boyd, maintenance manuals; C. E. Felder, flight handbooks; and G. S. Wright, commercial illustration (black and white).

Honorable mention went to G. Shelby and R. Ludolph, illustrated parts breakdown.

Nortronics winners in the first award category were E. Steinmeyer, retouched photos; Bob Peck, commercial illustration (color); and W. Baird, covers.

Second award went to W. Baird, brochures.

Third award went to Bob Peck and V. Hawes, brochures; and A. Wiseman, covers.

Honorable mention went to Bob Peck, commercial illustration (color); W. Baird, sales and promotional literature.

Radioplane's Grant Wright won a third award in commercial illustration (color); and an honorable mention went to B. Starr, sales and promotional literature.

PALMDALE-EDWARDS KEG CHAMPS—Marshall McCain, Palmdale facility sends photo of Palmdale-Edwards Norcrafter bowling winners in the valley Inter-Aircraft Bowling championships. From left, standing, Roy Babcock, Bill Wieble, Glenn Thomason. Front, John Vilarino and Wayne White. Team was six games ahead of closest competition. Won high series with 2891. Roy won high game—257. Glenn won trophy for most improved bowler.

NRC SURF FISHING CLUB TO WHEEL

Two big wheeling deals are in store for the NRC Surf Fishing Club, it is announced by John Pawlicki, commissioner.

This coming Saturday, May 27, members will meet at Sunset Beach, Broadway and 101 Highway at 6 a.m. and fish until 10 a.m. with all kinds of prizes in addition to the fact that one might add to ones deep freeze account.

Second newsworthy surf fishing event will be held June 6, 7:30 p.m. at the NRC Clubhouse with fishing movies and fish stories both true and untrue.

For the Sunset Beach meeting, fishermen may compete for Red's Bait Shop's special prizes by registering at either one of Red's shops. Phone number is FR 9-2569. Members should also sign with NRC rep at beach.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, June 7, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

NORTHROP-NORAIR NEWS BRIEFS

T-38 AT RANDOLPH—As is policy on all new Company products phasing into full-scale operations, T-38 status at Randolph is receiving immediate and daily personal review by top Division officers on department manager level. This close attention will continue even after the airplane is completely assimilated by ATC. As follow-up to department manager scrutiny, Corporate Vice-president and Norair General Manager Dick Nolan is briefed on operating reports, schedule performance and customer requests personally once each week. Constant vigilance by all Northrop-Norair personnel is required to maintain the Talon's outstanding reputation and the present "on schedule" production operation. Norair Vice-presidents George Douglas, Engineering, and John Alison, Marketing, recently returned from Randolph where they conducted on-the-spot review of airplane's performance. They conferred with ATC engineering, op-

(Continued on Page 2)

Air Force Compliments Company on Symposium

Institute of Technology
Air University
United States Air Force
Wright-Patterson Air Force Base, Ohio

Mr. Thomas V. Jones
President
Northrop Corporation

Dear Mr. Jones

Colonel Tyler and members of his staff have returned from the Norair Division where your Company presented a management symposium for Air Force Education With Industry officers. Colonel Tyler was very much impressed with the quality of the program from the standpoint of speakers selected, content of each presentation and the logical organization of the agenda . . .

The Institute of Technology has been aware for some time that Mr. Frank Mathes, coordinator for the Education With Industry program at the Norair Division, conducts one of the best programs for the Air Force. This fine presentation to students of this program confirms the quality of instruction received by our officers while studying with your Company. Colonel Tyler was particularly impressed with the positive management philosophy that all top level management exhibited in their presentations . . .

I am very grateful for your interest and assistance in assisting the Air Force in the Education With Industry program. This symposium is a high point in the program of the officers attending.

Sincerely
Cecil E. Combs
Major General, USAF
Commandant

Technologies Promise The Answer To Human Needs Of The World

Not the marvelous new equipment on display, but the technology behind it which offers promise of filling many human needs now troubling our world. This is the significance of the 24th Salon International De l'Aeronautique, Paris, France, stated Northrop Corporation President Thomas V. Jones in an address before the American Club of that city.

He warned that world technological competition demands such huge quantities of resources that it is imperative that technology be used in ways that will liberate resources for the widest possible benefits.

Norair Division products at the Salon, which formed a part of the large Northrop Corporation display, included the T-38 Talon trainer which took part in aerial demonstrations, a quarter-scale model of the airplane, a display of Laminar Flow Control, numerous replicas of Division space vehicles, space flight simulators, and life cycle systems.

The show is due to close this

(Continued on Page 3)

Norcrafters Invited to International Airport

A "Welcome Neighbor" preview of the first unit of the new jet age terminal at Los Angeles International Airport is scheduled for Friday, June 23, from noon to 7 p.m., a day before the official open house for the general public.

All employees of industry located on or near the airport are cordially invited to attend the special pre-public program, which will include inspection of the first ticketing and satellite building, the first Southern California showing of the complete "umbrella for defense" of the North American Air Defense Command, a continuous music festival and a fashion show of travel clothes by The Broadway Department Store.

NRC Symphonaires will be on this show on June 24, 4 p.m. They will sing from Satellite Seven.

The best of the Los Angeles aerospace industry will be spot-

(Continued on Page 3)

RAPID CITY—Rapid City Chamber of Commerce stages dinner for The Martin Company in appreciation for trip for civic leaders to TMC plant in Denver. Photo shows Bob Lloyd, Norair vice-president, Manufacturing; Dr. Wm. L. Whitson, The Martin Company vice-president and general manager; and Tom Walsh, president, Rapid City Chamber of Commerce during banquet ceremonies. Mr. Lloyd; Jim Matthews, Norair manager, Site Activation; and Max Fayrweather, T-2 Site manager; attended dinner at special invitation of Chamber of Commerce and TMC.

Gen. Warren Made CO At Edwards

Major Gen. Robert H. Warren, 43, of Tampa, Fla., now senior U. S. member of the United Nations Military Armistice Commission in Korea, has been chosen to succeed Major Gen. John W. Carpenter III as Air Force Flight Test Center (AFFTC) commander, Edwards Air Force Base.

Announcement of his selection came from Lt. Gen. Bernard A. Schriever, who heads the Air Force Systems Command (AFSC), Andrews AFB, Md., of which AFFTC is a part. No date was announced for General Warren's assumption of his new command.

General Carpenter, 44, has been transferred to the Pentagon as Air Force deputy director of plans and expects to leave Edwards about June 12. He has been center commander since March 2, 1959.

General Warren, a 1940 West Point graduate, is in Korea on temporary duty from the Air Proving Ground Center, Eglin AFB, Valparaiso, Fla., also under AFSC, where he has been vice commander since July 1959.

A native of Yankton, S. D., he flew anti-submarine patrols along the Atlantic coast from Newfoundland to Florida during the early part of World War II and 38 bombing missions in Europe with the 14th Bomb Wing.

His decorations include two Legions of Merit, two Distinguished Flying Crosses, three Air Medals, the French Croix de Guerre with Palm and Military Cross of Greece.

EDUCATION WITH INDUSTRY—Northrop officials and Air Force leaders discuss high points of recent management symposium presented for AF officers in USAF's Education With Industry program. From left, Al Morgan, vice-president, Contracts and Service; Dick Nolan, Corporate vice-president and Norair general manager; Captains I. Valdez and R. E. Griffin, on training duty tour at Northrop and coordinators of the agenda; Colonel John Tyler, dean, School of Engineering, USAF Institute of Technology, Air University; and Frank Mathes, chief, Field Support group. Norair was host to 40 officers during the two-day meeting. See letter above for commendation.

Astro Sciences Men Will Speak On Zero Gravity

Norair Division's Space Physics Laboratory men Dr. E. T. Benedikt, head, and Richard Lepper, senior engineer, will speak on zero-g sciences before the American Astronautical Society at the Rand Corporation tomorrow evening, June 8, at 8 p.m.

Dr. Benedikt will discuss theoretical hydrodynamical heat transfer in a zero gravity environment.

Mr. Lepper will speak on a method of producing a rigorously zero gravity environment and experimental results with Norair zero gravity tower.

Dr. Benedikt and Mr. Lepper are members of Norair Division's Astro Sciences group.

Rand Corporation is located at 1700 Main Street, Santa Monica. Those attending are asked to use the north lobby. The symposium will be held in the administrative conference room.

NASA Awards Contract to Norair For Norcom System at Saturn Site

The National Aeronautics and Space Administration's George C. Marshall Space Flight Center has awarded Northrop Corporation a $91,967 contract to provide a Norcom voice communications system for the Saturn launch complex at Cape Canaveral, it has been announced.

Norcom, developed by Norair Division (See Norair News, June 8, 1960), is designed for clear, reliable voice transmission regardless of high noise environment. A 215-station Norcom network will be installed throughout Complex 34 at Cape Canaveral where the huge C-1 Saturn booster will be flight tested.

Norcom equipment is in use on Navy Regulus missile pads at Point Mugu, and in satellite tracking stations at Vandenberg Air Force Base. The system originally was developed for use in Snark intercontinental missile launch bases.

Because each station in a Norcom system is equipped with an amplifier, up to fifty or more operators can be connected on a common send-and-receive line with negligible signal variation. Units are individually controlled so that malfunction or combat damage to one station does not impair the operation of the overall system.

Norcom's high component reliability is the result of maximum design simplicity achieved through transistorized amplifier units in modular construction. The system replaces cumbersome central amplifier control and four-wire systems with the independent unit concept based on a two-wire system.

Designed for compatibility with existing communications networks and equipment, Norcom is readily engineered to meet specific military and industrial requirements for conference line intercoms, sound alert and paging, telephone tie-in, countdown timing, and RF systems.

Norcom is ideally suited to conference and hot-line communications requirements. Confined, isolated, and extreme high-noise environments represent prime areas for application. The system can be used in submarines, ships, aircraft, armored tanks, factory production areas and a variety of industrial situations.

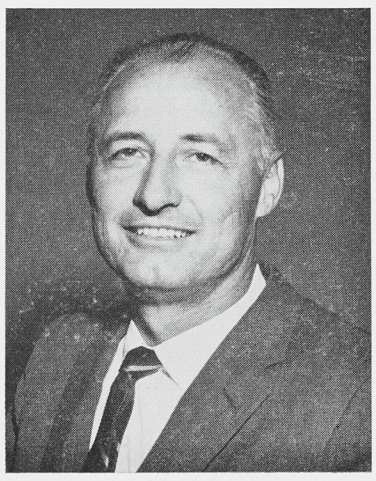
Macdonnell Assigned to Head Norair Commercials

Norair Division commercial product activities have been moved operationally from Marketing to the office of J. Grant Macdonnell, Division treasurer, it has been announced by Corporate Vice-president and Norair General Manager Dick Nolan.

Also in line with the new assignment and in addition to his treasurer duties, Mr. Macdonnell was made special assistant to the general manager.

"Norair Division potential in commercial product applications is steadily increasing," stated Mr. Nolan. "Mr. Macdonnell in this position will assist me in coordinating this important activity."

GRANT MACDONNELL



R. M. MCNAMARA

Mr. Macdonnell was also assigned responsibility to the general manager for direction of Acme operations for Norair and for implementation and best integration of new commercial products between Norair and Acme.

Coupled with the commercial product move, it was announced that R. M. McNamara had been appointed Division Controller, responsible to the treasurer for all Finance operations.

Mr. Macdonnell has been a Norcrafter since 1942 when he joined the Company as an accounting supervisor. Advancing rapidly in the corporate structure, he held the positions of special weapons administration director, budget administrator, assistant to the president of Northrop and assistant treasurer of the Norair Division. He was named treasurer in October 1959.

He is a graduate, class of 1930, from McGill University, Montreal, Canada.

Prior to joining Northrop, he worked in the trust department of the National Trust Company, Montreal, 1930 to 1934, and was director of new business for the First Trust and Savings Bank, Pasadena, California, 1934 to 1942.

A resident of Pasadena, Mr. Macdonnell is active in many professional, social and fraternal organizations.

Mr. McNamara who was director, Accounting and Budgets, prior to his new assignment has been a Norcrafter for over 20 years, having joined the company in 1940.

He has held many key positions in the Company including assistant to the vice-president of Manufacturing, Norair; manager of Administration and manager, Accounting and Finance, Anaheim; chief, Cost Accounting; and executive assistant to the controller, Norair.

Mr. McNamara is a graduate of the University of California at Berkeley, class of 1939. He holds a bachelor degree in psychology.

Waldschmitt President Of Page

Election of Joseph A. Waldschmitt as president and chief executive officer of Page Communications Engineers, Inc., international communications subsidiary of Northrop Corporation, has been announced.

Mr. Waldschmitt, who has been with Page since its founding in 1947, previously was executive vice-president. He succeeds Esterly C. Page, who was elected chairman of the board. Mr. Page will devote his full time to the chairmanship. Creation of the board chairmanship as a full-time assignment was made possible through the resignation from the Page board by Thomas V. Jones, Northrop president, who has completed a two-year term as chairman of Page, in addition to his other duties.

Richard E. Horner, Northrop senior vice-president, was elected to the Page board, succeeding Mr. Jones. Other Page directors are Robert R. Miller, Northrop senior vice-president, Dr. William Ballhaus, vice-president and general manager of Nortronics Division, Mr. Waldschmitt and Mr. Page.

Two Page executives also were elected vice-presidents. They are Glenn G. Peebles, director, Construction and Installation, and Mr. Charles L. Ill, director, Administration. Mr. Peebles has been with Page 11 years and Mr. Ill for 8 years.

POLIO CLINIC AT CLUBHOUSE FRIDAY, JUNE 16

There will be a polio clinic at the NRC Clubhouse next week, Friday, June 16, it has been announced by Dr. R. J. Krebsbach, Norair chief, Medical group.

Time of the clinic will be 6 to 9 p.m.

At the last polio clinic, May 11 and 12, approximately 750 inoculations were administered.

FRANK LYONS TO CHAIR IEE TRANSPORTATION

Frank Lyons, Norair chief, Support Equipment group, has been invited to serve as chairman of the Institute of Electrical Engineers Aerospace Transportation Committee for 1961-62.

The invitation is from W. H. Chase, presidential nominee of the Institute for the coming year.

The work of Mr. Lyons' committee will be of high importance to projection of a new Aerospace Application division within the IEE.

Subcommittees now in planning stages to support the new division will consist of an Energy Conversion committee, Guidance and Control committee, Flight Vehicle System Integration committee, and Support Systems committee.

NORTHROP-NORAIR

NEWS BRIEFS

(Continued from Page 1)

erations people, and key officials of the Command to get customer opinion and to give highest Division priority to ATC requests. Next visit is scheduled for tomorrow and Friday, 8 and 9 June when Mr. Douglas and Church Haenke, director, Manned Aircraft, Marketing, will review progress with the commander and staff of ATC. They are programming similar visits to the Base each month.

T-38 AND THE AIR FORCE ACADEMY—Six T-38 Talon aircraft are a feature in the Air Force Academy's 1961 graduation ceremonies, today, it is announced by Dick Nolan, Corporate vice-president and Norair general manager. The airplanes will perform fly-bys as a highlight of the occasion. Alex Morrison, Norair-Nortronics representative, Denver, coordinated Company details of the demonstration.

ARMY'S MAN-MACHINE—N-156 and T-38 airplanes engaged in Armed Forces evaluation program seeking suitable weapons for U.S. limited war purposes had totaled more than 60 hours flight time by last week . . . Army and Marine piloted flights are taking place at Jacksonville, Florida . . . T-38 is being used for checkout flights to prepare pilots for N-156. N-156 flights are being made for variety of Army close support tests including rocket firing, machine gun firing, bomb drops, napalm drops, minimum distance takeoffs and landings, sod field landings, and low level surveillance. Norair participation is a Division-wide effort. Tests officially started 8 May, are scheduled for completion late this month.

MISSION OF RESEARCH AND DEVELOPMENT —It is the mission of research and development not only to maintain our present worldwide technological lead in weapons and equipment—but to replace existing material by improved or entirely new models as rapidly as possible. —*OCI US Army*

GERMANY AND THE T-38—*From United Press International,* "The West German Air Force is considering purchase of the Northrop T-38 jet trainer, the Defense Ministry has reported. One of the trainers has been tested by the German Air Force at Norvenich Air Base, a spokesman said, to see if it is suitable for the Luftwaffe. The T-38 is capable of speeds above that of sound and is used by the U.S. Air Force to train jet fighter pilots. Germany requires such a plane to train its pilots for the F-104 Starfighter with which it will equip its Air Force" . . .

WASHINGTON, D.C.—Senator Barry Goldwater (R) Arizona, has taken his first checkout flight in a T-38 Talon supersonic jet trainer. The Arizona Senator, who has already flown 15 other jet aircraft, including all but one of the Century Series Air Force fighters and all the jet bombers in the USAF inventory, spent approximately one hour putting the T-38 through its paces. Senator Goldwater, a brigadier general in the Arizona Air National Guard, made his T-38 checkout flight at Andrews Air Force Base near Washington. Norair Senior Washington Representative Willard W. Millikan, who rode the instructor's cockpit during Senator Goldwater's flight, commented afterwards, "I never even touched the controls."

INDUSTRY'S ROLE IN NATIONAL DEFENSE — "Industry plays a principal role in national defense all along the line. In addition to producing the necessary hardware for defense, our national leaders look to it more and more to contribute to our strategic planning. So deeply have the roots of technology sunk into the fundamentals of modern military activities that a present-day military planner without solid liaison with industry would be like a commander without a staff. This dependence on industry's finest minds will increase with the ever-ascending technological spiral, and it presents industry with a ringing challenge."

—Secretary Of The Army Elvis J. Stahr, jr.

Senate Bill 1294 To Up Auto Taxes 50 Per Cent

A vehicle license bill, now in committee in the California State legislature, could mean a 50 per cent increase in automobile taxes.

Senate Bill 1294, if passed, would permit individual counties to levy local license fees in addition to those already being collected by the State.

It is estimated by the Automobile Club of Southern California that SB 1294 would increase taxes on a new Ford, Chevrolet, or Plymouth, from the present $42 to $63. Other makes of cars would increase accordingly.

To effectively combat passage of 1294, you should:

1. Inform yourself as to the current status of SB 1294. (The Auto Club offices are a good source of information.)
2. Most important, write your Assemblyman and Senator and express your views on this subject.
3. Communicate with your city council, board of supervisors, and groups within your community and urge your point of view.
4. Send a note to the legislative bureau of the firm you buy auto insurance from and let them know how you feel. It will be of assistance to their representatives in Sacramento.

Northrop-Norair News

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NORAIR DIVISION

CHARLES BRADFORD, Editor

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Army Awards Radioplane $1.8 Million In Contracts

Radioplane Division, Northrop Corporation, has been awarded $1,800,866 in defense contracts by the Department of the Army, it has been announced.

The amount, highest to go to any one company in this area, is part of a total of $6.5 million in Army orders placed in Southern California in the past four weeks.

The contracts are for: $165,000 for target missile production; $815,866 for target missile flight services; and $920,000 for engineering services.

Norair Division participates in Radioplane's target missile flight service through the El Paso facility by providing aircraft, materials, and flight operations. Eighty Norcrafters, eight F-89 Scorpions, and one DC-3, make up the Norair activity.

Next highest total in the Army awards was Douglas Aircraft with $1,721,071 for Nike missile spare parts and launching area items, and for guided missile trailers.

Eighteen concerns shared in the contracts.

JACKMAN IS REP AT AIA TEST MEET—SEATTLE

Royal Jackman, chief, Engineering Laboratories, attended the AIA's Aerospace Research and Testing Committee meeting at Seattle, Washington last week.

Mr. Jackman has been active in the work of this committee for a number of years and has been instrumental in helping to set industry standards and specification criteria.

Also, during his Seattle visit, Mr. Jackman attended a briefing and tour of the Dyna-Soar program at Boeing Aerospace Division.

Technologies—Jones

(Continued from Page 1)

week.

In sounding his challenge to world use of science, Mr. Jones stated, "It would be virtually immoral to squander technical and physical resources in pursuit of objectives of only limited significance."

Modern science, Mr. Jones pointed out, continues to provide a menu of new and exciting choices that is so long and diverse that "neither the United States nor the Free World, nor the Russians can possibly pursue all of the lines of technological development to which our growing skills invite us.

"The world's technological competition," he said, "is not a series of sprints but a continuing marathon demanding the wisest possible use of the tremendous resources involved."

Government and industry are compelled to make choices to determine which technological projects should be pursued, Mr. Jones said, adding:

"The success which we or any other nation or group of nations will have in serving the need of mankind will depend on the wisdom with which we make these choices."

Mr. Jones urged that management of technology by government and industry be guided by four principles.

He called for (1) encouragement and stimulation of scientists to continue to provide the maximum number of interesting scientific possibilities; (2) wise choices as to which possibilities will be pursued; (3) ingenious combinations of choices to expand the scope of their applicability; (4) the most efficient use of resources, utilizing advancing technology itself to attain the widest possible benefits.

Jones urged closer cooperation between North America and Western Europe so that their vast technological resources can be directed toward filling the gap between the "nations of abundance" and the newly-emerging nations with " an abundance of people in need of help."

The existence of this gap, he concluded, constitutes "an opportunity—and an obligation—since the development of opportunity for the betterment of the individual is the heart of our economic and political philosophy."

Airport Preview

(Continued from Page 1)

lighted in 30 static displays. Participants include Northrop Corporation, Bell Helicopter Corp., Convair, Douglas Aircraft Co., Federal Aviation Agency, Garrett Corp., Hiller Helicopters, Hughes Tool Corp., Norman Larson Co., Librascope, Lockheed, North American Aviation, Pacific Telephone and Telegraph, Shell Oil, Zep Aero, and other prominent members of the vast Los Angeles industrial empire.

The ticketing and satellite building will open for inspection at noon. The musical salute to the new jet age terminal will begin at 2 p.m., and the fashion show . . . "California Fashions Go Everywhere" . . . is scheduled for 6:30 p.m.

Visitors will enter the airport at the southwest corner at Sepulveda and Century Boulevards, crossing the threshold to the fabulous new World Way. Parking will be available for those driving in at a charge of 50 cents an automobile.

The first unit of the new jet age terminal which will be previewed will go into operational service on June 29.

Baker, Pierce, Banerian Tie For Low Gross

First place golf winners at the El Rancho Verde are reported by Commissioner John Banerian.

Low net went to C. Hutcheson with an 86-18-68.

Low gross was a three-way tie at 80 between John Banerian, M. L. Baker, and R. Pierce.

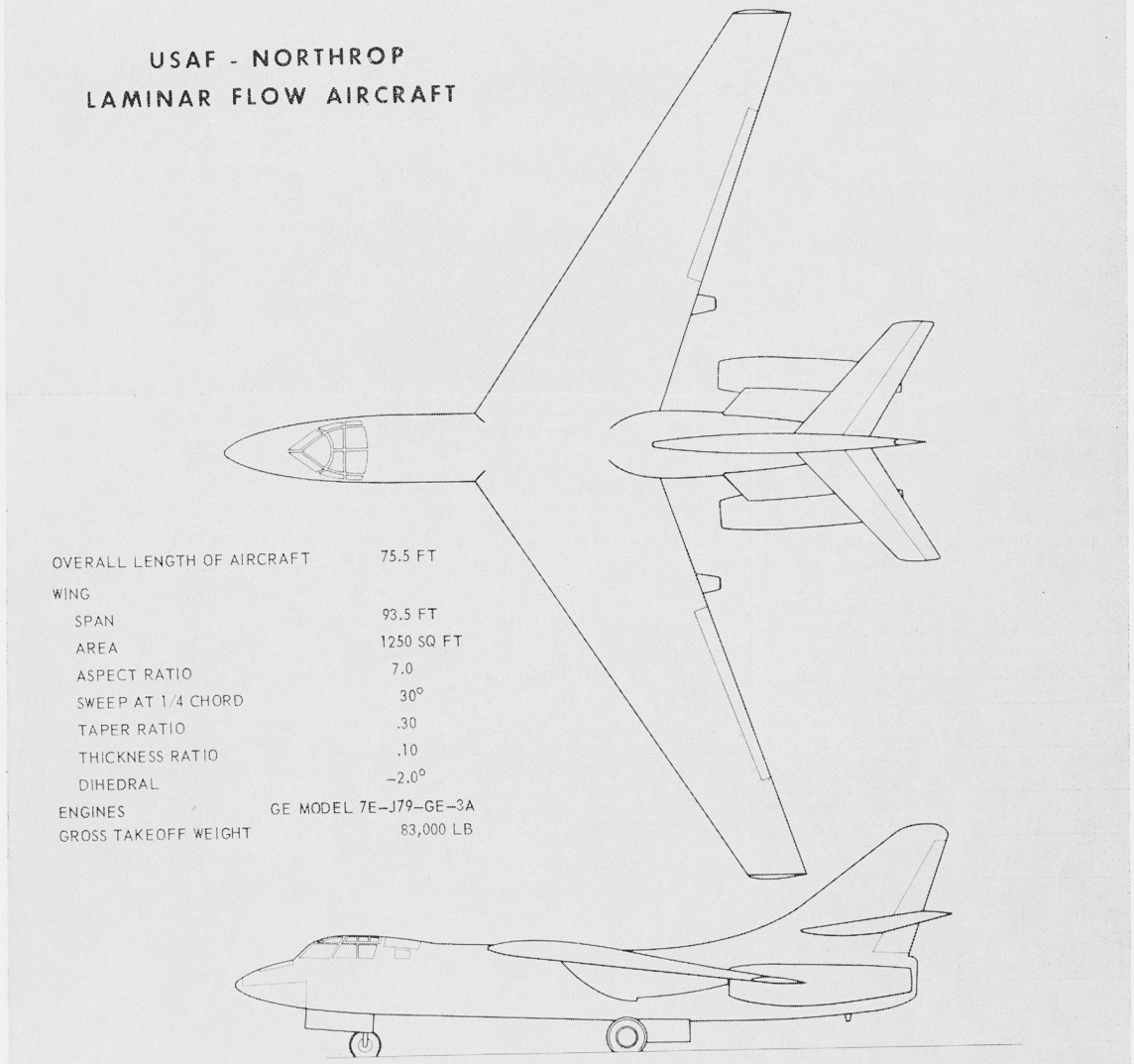
First flight was won by V. Wilson, 84-12-72.

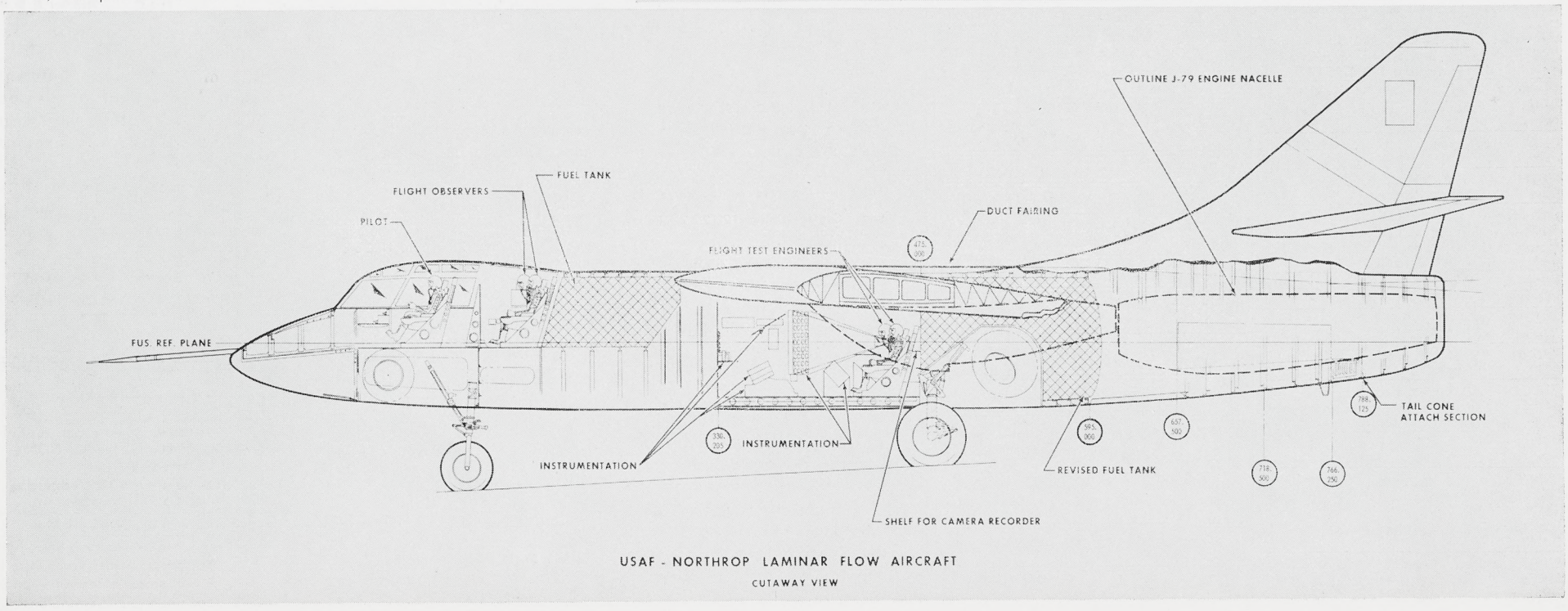
Second flight went to L. Mitchell, 89-17-72.

Third flight to L. Lowe, 90-20-70 and fourth flight to J. B. McDonald, 96-23-73.

Three-View, Cutaway Of LFC Airplanes

LFC VIEWS—Three-way and cutaway views of Norair Laminar Flow Control development airplanes show location of engines, give overall dimensions and other pertinent data. Note well-provided-for instrumentation area and positions of flight test engineers. LFC is expected to increase range, payload and endurance of large aircraft by 50 per cent.





RIDES WANTED

7 a.m. — 3:45 p.m.

ORANGE & 37th ST., Long Beach. G. J. Grummer, 2574, GA 4-6383. 2

CLOVERFIELD AVE. & COLORADO AVE., Santa Monica. Al Quinlan, 1750, EX 5-9735. 2

7:30 a.m. — 4:15 p.m.

HAWTHORNE & LENNOX BLVD., Lennox. Carol Taylor, 1708, OR 2-1881. 3

LOS ALAMITOS & BRADBURY RD., Los Alamitos. J. C. Green, 1873. 3

LINCOLN & STRAND, Santa Monica. Harlan P. Rutter, 1366, EX 2-2628. 3

8 a.m. — 4:45 p.m.

ANZA & 190th ST., Torrance. Iva M. Eis, 2013. FR 1-3802. 5

LA BREA & HYDE PARK BLVD., Inglewood. Marie Clair, 412, OR 4-2319. 5

4:45 p.m. — 1:15 a.m.

SANTA MONICA & WESTERN AVE., Hollywood. Arval N. Pierce, HO 7-5631. 8

RIDES OFFERED

7:30 a.m. — 4:15 p.m.

LINCOLN & STRAND, Santa Monica. Harlan P. Rutter, 1366, EX 2-2628. 13

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

UTILITY TRAILER, box-type, 4'x4'x7', $50. PL 4-9131. A

ANGLIA, 1958, W/W, R&H, $650. WH 1-8637. A

RUNABOUT, 15', w/flying bridge, convertible top, Marine radio, 50 hp Evinrude, $1250. FR 5-5667. A

HEADBOARD for Hollywood bed, blue plastic covered, $15. FR 5-0061. A

HOUSE, 3-bdrm., near grammar school, $26,000. OR 1-9312. A

AQUARIUM, 19 gal. tank, comp., w/ enc. cabinet, 42"x36", $45. OL 7-2364.

KITTENS, Siamese, Blue Points, 5-wks.-old, pedigree, $30. OS 5-1842. A

FORD, 1954, 4-dr., $250. FA 8-3320. A

BICYCLES, 2, boy's, 26", American-made, $20 & $14. FA 8-3306. A

OUTBOARD MOTOR, Mercury, Mark 55 M, 40 hp, $200. OR 4-3426. A

MGA, 1957, black, new carpeting, w/w, heater, $1215. OR 4-6328. A

SHOPSMITH, w/accessories, $165. DA 6-4195. A

BABY FURNITURE, bassinet w/pad & cover, $3; bed, mattress, 22x42x40, $7; 3-in-1 carriage, w/pad, $10; jump seat, $4; 3 maternity suits & 1 skirt, size 18, $5 or all for $25. FR 5-4574. A

SEWING MACHINE, semi-auto.; Swiss-made, Turissa, $125; bicycles, 26" & 24", $20 & $15. CR 6-4879. A

HOUSEHOLD FURNISHINGS, curved sectional 3-pc.; tilt-back chair w/matching footstool; rug w/pad, 12x14, short-loop cotton; matching lamps, 1 pr.; step-up end tables, 1-pr., w/matching coffee table; drapes, 2-pr., full-length, $190 or will sell separately. NE 5-0878. A

DINING ROOM TABLE, heavy maple drop-leaf type w/4 captains chairs, $90. OS 5-0279. A

CHEVROLET EL CAMINO, 1959, w/ extras, $1900. DA 6-0310. A

PISTOL, 45 SW. long colt, shells & holster, $40. OS 6-3448. A

OUTBOARD MOTOR, 1958, Royal Scott, 40 hp, w/Key Switch elect. starter, remote controls, spare prop. & 2 fuel tanks, $200. DA 4-1578. A

RANGE, Wedgewood, w/rotisserie, chrome top, $100. FA 1-3923. A

RANGE, Wedgewood, $150; dinette set, 6 pc, 1 leaf, $40. OR 2-5783. A

RANGE, GE, $75; refrigerator, Servel, $20. OS 6-2162. A

AIR-CONDITIONER, Fedders, ¾ ton, room-size, window-type, pushbutton controls, $80. FR 9-3134. A

RANGE, apt.-size, gas, $35.50. OS 6-1251. A

IRONER, auto., console, $40; sailboat, Sabot, all Fiberglass, $180; TV console, 16", $60; TV table set, 16", $35; training bicycle, $8; tape recorder, $90. DA 3-6717. A

RUG, 9'x15'6". Berven Mills Early Californian broadloom, reversible, multicolor, wool, w/pad, $50. PL 5-8417. A

NRC Signs Leuzinger Swim Pool

There comes a time of year when nothing satisfies like a good swim. And this urge is soon to be satisfied for all Norcrafters through the good offices of the Northrop Recreation Club.

Leuzinger High School plunge has been signed beginning Tuesday, June 27 through August 24.

Norcrafter days will be Tuesdays, Wednesdays, and Thursdays.

Sorry, can't bring next door neighbor and his family. Only Northrop personnel and their families may participate.

The musts are few in number. All swimmers should bring a towel and women must wear bathing caps.

That is all. Rosenquist.

P.S. It is free.

P.P.S. It's okay to bring grandma.

KNIT ONE, PURL TWO—ARGYLES?

Knitting needles fly and sweaters come out.

Vera de Villiers, commissioner, NRC Knitting Club, reminds Norcrafter ladies that knitting instruction is being offered every Thursday evening, 7:30 p.m. at the NRC Clubhouse. Mrs. Rose Dutsch is the expert.

"You can learn from the beginning," states Rose, "or you can brush up on the techniques you have. There was never a better opportunity."

(Ed. note.) What's wrong with a pair of argyle socks for the lord of the manor once in a while?

SCHREYER WILL SPEAK ON TECHS

Norcrafter Warren Schreyer, supervisor, Research and Development, Norair Engineering Laboratories, will address Nortronics Management Club this evening June 7.

His topic will consist of technical information presented in nontechnical language.

FOR SALE

CHEVROLET, sedan, 1948, gd. trans., r/h, $100. TH 5-4490. A

CHEVROLET BEL-AIRE, 1953, 2-dr., pwr-glide, p/steer, r/h, $425. OS 6-0874.

TRAVEL TRAILER, 1953, American, 27', steel body, eastern built, completely furn., $1000. TA 8-5054. A

PIANO, upright, $115. DA 7-9084. A

TRAIN, elec., min.-size, w/track & board, $60. OS 6-6390. A

PIANO, upright, $120. FR 5-8847. A

FORD PICKUP, 1949, 6 cyl., $280. DA 3-1026. A

EDGER, electric, $12. OR 1-4462. A

CAMERA, Kodak, w/Kodak lens, flash attach. & leather case, $15. FR 1-2679.

WANTED TO BUY

ENGINES, 4, 8 hp gasoline-type, tires, 4.00x8, &/or wheels to fit. NE 8-3131.

FREE (to be given away)

WOODEN GATE, 49"x79". PL 7-2753. D

PUPS, Boxer & Shepherd, excellent for children. OS 5-3711. D

RENTALS OFFERED

BACHELOR APT., furn., util. pd. OS 9-3129. E

ROOM, unfurn., private bath & entrance. OS 6-0626. E

PERSONALS

ELDERLY MAN on special diet requires person to prepare evening meals. FR 9-4517. L

FLYING to La Paz July 15-24. Need 2 persons to share plane expenses. GL 4-7770. L

FOR SALE OR TRADE

PICKUP, 1957, ½-ton, 6 cyl., $950 or will trade. GA 4-6383. M

NRC Vignette #10

NRC Camera Club

THE NRC CAMERA CLUB—One of the original clubs which formed the nucleus of the Northrop Recreation Club shortly after Company founding, the NRC Camera Club has been regularly active for over two decades. Requirements for participation are simple. Do you enjoy taking pictures? Club activities include meetings on the first and third Wednesday of each month at the Clubhouse, camera field days to such points of lens interest as Vasques Rocks, Palo Verdes shoreline, the harbor area, Olvera Street. Indoor workshops are also held where members photograph live models, still subjects and other items of challenge to the amateur photographer. Photo, taken during the recent annual Salon, shows members and families at the NRC Clubhouse as their prints undergo scrutiny by professional judges. Awards are usually in three categories; black and white, color and stereo. On display is John Ray's first and second place black and white prints, "Nope, I Can't Ski" and "Old Bill", and third place winner Martha Tarplee's "Through the Drifts". Life is more enjoyable for the NRC Camera fan as the Club maintains a completely equipped darkroom for member use. All Norcrafters are welcome to take part in the NRC Camera Club. Bring your camera be it a box Brownie or Linhof. Meeting time is 7:30 p.m. Check in with Commissioner Howard Butler, man with glasses extreme right in photo.

NEXT TOURNEY PLAY SET FOR GREEN RIVER

The next NRC golf tournament will be held at Green River Golf Course on June 24.

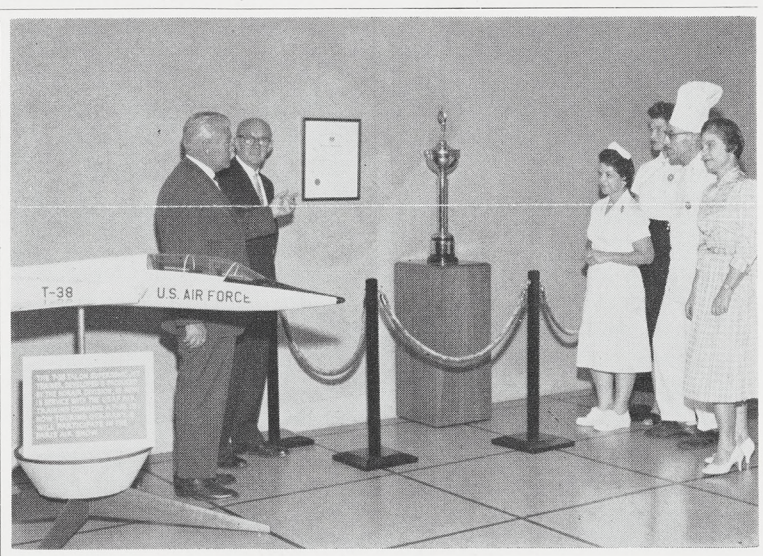
Entries are open, Monday, June 12. Forms and road maps to the course are available at Personnel Activities.

John Banerian advises it is not necessary to enroll as a foursome, individual entries will be accepted.

Play will consist of 27 foursomes. Green fees, $3.50 plus prize money.

The next tournament has been scheduled for Ojai, July 16. This will be 25 foursomes. Green fees will be $5 plus prize money. Starting time, 8 a.m.

The August tournament is being rescheduled. San Clemente golf course is a strong possibility.



DISPLAY FOR DINERS—Norair cafeteria patrons are now treated to Company news highlights in the form of a continuous display of timely and significant events. Photo shows Charles Boyle, supervisor, Personnel Activities and display coordinator; Bob Lehman, area engineer; and cafeteria personnel, Opal Arnold, Ruby Soderlund, John Korn, and Mildred Holley, previewing exhibit of scale model of T-38 and the General Muir S. Fairchild Trophy.

NRC Good Time Table for June

For enrollment or information on activities listed below, call or contact Personnel Activities, Plant One, extension 2784. All clubs meet at the NRC Clubhouse unless otherwise noted.

ART CLUB, Stewart Luce
Meets Thursdays, 7-10 p.m., Joe Kalina's Studio, 3234 W. 157th St., Gardena.

BALLROOM DANCE CLASS, Wes Williams
Thursdays, 7-10 p.m. Newcomers welcome. Cost $10 each.

BIBLE STUDY, C. J. McGuire
Plant I—Daily, 11:30-12:15, Tool Design Bldg., 11-11:45, 5566 Conf. Room.
Plant II—Mondays & Thursdays, 12-12:45, Conf. Room 2.
Eng. Center—Daily 12-12:45, Reliability Conf. Room.

BOAT CLUB, Sandy Friedfeld
Meets 4th Wednesday, 7:30 p.m.

BOWLING (days), Earl Saunders
Summer leagues rolling.

BOWLING (nights)
Summer leagues rolling.

BOY SCOUTS
Sea Scouts meet Tuesdays, 7:30 p.m.
Cub Scouts meet 4th Friday, 7:30 p.m.
Boy Scouts meet Thursdays, 7:30 p.m.

CAMERA CLUB (days), Howard Butler
Meet 1st & 3rd Wednesdays, 7:30 p.m.

CAMPING CLUB, Fred Armstrong
Meet 1st Wednesday, 7:30 p.m.

FISHING CLUB, Harold Rapella
Charter boat, "New Longfin," June 24, $12.

GEM & MINERAL CLUB (days) Bill Puniwai
Meets 2nd Wednesday, 8 p.m.

GEM & MINERAL (nights), Doyle Shook
Meeting place varies.
Meet 1st Wednesday, 1 p.m.

GOLF, John Banerian
Green River, June 24, 11 a.m., cost $4. Entries open June 12.

MIXED CHORUS, Ron Henderson
Meets Tuesdays, 7:30 p.m. Grand opening L.A. Airport, June 24, 4 p.m.

MODEL RAILROAD, Jack Wilson
Meet in Annex, Thursdays, 7-10 p.m. Visitors welcome.

RADIO CLUB, Paul Serafin
Meet last Thursday, 7:30 p.m. Radio code class meets Tuesdays, Wednesdays, Thursdays, 7:30 p.m. NRC's station is W6VPZ.

RIDING CLUB, Tex Statley
Meets 4th Sunday, Western Avenue Country Club, 4 p.m.

SKEET CLUB, Bob Bagby
Shoots alternating Saturday, June 17 at Rancho Angelus Range, Main & Broadway, 10 a.m. June 10 and June 24, a trophy shoot.

SKINDIVING, Ralph Gonzales
Meet 3rd Tuesday, 7:30 p.m. Special scuba movie.

SOFTBALL
League play, Lennox Park, Wednesdays. New players welcome.

SPORTS CAR CLUB, Lou Perry
Meet 2nd Thursday, 7:30 p.m.
June 25, luck slalom.

SQUARE DANCING, Dick Rinehart
Fridays, 8-11 p.m., Ralph Hill's Hall, 15701 S. Crenshaw.

SURF FISHING, John Pawlicki
Meets June 6, 7:30 p.m. Special program: speaker & movie.

SWIMMING
Leuzinger High School every Tuesday, Wednesday, Thursday, 4:45-7 p.m. Opens June 27.

TENNIS, John Potts
Free instruction every Saturday, 10 a.m., at El Camino Jr. College. Indus. League play alternate Sundays.

TOASTMASTERS 212 (days), Jack Apodaca
Meet at Cockatoo Inn Thursdays, 6:30 p.m.

TOASTMASTERS 1398 (nights), Jay Rayner
Meet at Western Ave. Country Club Thursdays, 12:15 p.m.

TRAVEL CLUB, Howard Cornelius
Next meeting June 7, 7:30 p.m. Upcoming European trip.

FOR THE LADIES

BOWLING (nights)
Summer leagues rolling.

BOWLING (days), Corinne Davis
Summer leagues rolling.

GIRL SCOUTS
Mariners, Tuesday, 7 p.m., Naval Reserve Center, 201 W. 126th St., Hawthorne, ages 13-18. All Norcrafter girls welcome.

KNITTING, Vera de Villiers
Meets Thursday, 7:30 p.m. Free instruction each meeting.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, June 21, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

NORTHROP-NORAIR

NEWS BRIEFS

TASK FORCE PROGRESS—Significant progress on Integrated Management Systems has been announced by Jack Mannion, assistant to the general manager and chairman, Organizational Task Force. Phase One analysis of change to central parts listing has indicated quick payoff of implementation costs . . . (See News Briefs, 26 April 1961) . . . Task Force has authorized Administrative Services to conduct additional team studies of systems downstream to take full advantage of central parts listing economies . . .

LFC PROGRESS—This week Norair Laminar Flow Control Department is host to 20-man Air Force team from Aeronautical Systems Division for a development engineering review (DER) on Laminar Flow Control. Team is headed by Major Andrew Tice, chief, LFC Project Office and Phil Antonatos of ASD's Directorate of Advanced Systems Technology. Meeting is periodic, being scheduled each two months for purpose of reviewing project progress and specific design details. Team will be here all week. . . . LFC program continues on schedule, reports Milt Kuska, manager, Laminar Flow Control Technological Airplane Project Department. Final Cornell wind tunnel tests on surface pressures began this week. . . . Wing box laboratory specimen has been completed and is under test to prove soundness of structural design. . . . Major tooling is being built. . . . Detail drawings are being released. . . . Test panels which will determine and optimize bonding techniques and procedures are under test. . . . LFC tool to drill openings to tributary ducts has been delivered and is in use. Tool, specified by Norair, was built by Dyna Systems, Inc. of Torrance utilizing their "Tornetic" control as a power monitoring feature.

(Continued on Page 3)

WELKO GASICH

ALAN KIDD

Proud Counselors

CITATION—Norair men are signally honored with Junior Achievement Awards in recognition for outstanding job in support of JA programs. Discussing the citation with John Breneman, Norair director, Night Operations, left, are award recipients Jack Miller and John Holman. Jack and John are JA counselors. They also volunteered to teach local high school students fundamentals of the American system of free enterprise.

NORCRAFTERS IN KEY ROLES AT JOINT IAS-ARS MEETING

Seventeen Northrop Corporation engineers and scientists, led by Senior Vice-president Richard E. Horner participated in sessions of the joint meeting of the Institute of Aerospace Sciences and American Rocket Society held June 13-16 at the Ambassador Hotel in Los Angeles.

Mr. Horner served as chairman of the conference on military space systems and was toastmaster at the IAS-ARS luncheon in the Cocoanut Grove.

Charley Eyres, assistant to the vice-president, Engineering, was general chairman of the conference.

Northrop scientists and engineers also served as coordinators during the national joint meeting.

Twelve Northrop engineers presented technical papers on subjects ranging from Laminar Flow Control for transport aircraft to an automatic missile checkout system for Polaris missiles.

LAMINAR FLOW

Highlighting the important first day session was a paper by Welko Gasich, director, Advanced Systems, Norair Division, in which he told how the range and efficiency of transport aircraft would be increased by application of Laminar Flow Control.

Norair is currently at work redesigning and modifying two former WB-66D weather reconnaissance aircraft on an Air Force sponsored program to demonstrate performance stretching characteristics of Laminar Flow Control.

Another aspect of Laminar Flow Control was discussed by J. E. Wieder, senior engineer, Boundary Layer Research, in his presentation of "Structure of Laminar Flow Control" before a conference on structures and materials.

RELIABILITY

Also, during the meeting's first day, Dr. W. E. Cox, chief, Reliability and W. W. Harter, supervisor, Systems Reliability presented a paper titled "One-Shot Mission Success for Minimum Cost" explaining different methods of accomplishing space missions at lowest cost.

At another conference on the same day Richard Towesly, Nortronics Division, discussed how Nortronics produces automatic checkout equipment for Polaris missiles.

On Wednesday, June 14, Lee Ohlinger, director, Computing and Data Processing Services, talked on "A New Scientific Management Technique for the Air Force" and Walter Darby, Norair engineering specialist, Aero and Propulsion Sciences group, presented findings on "Correction for the Effects of Finite Thrusting Time in Orbit Changing Maneuvers".

VTOL FLIGHT

Later that day John Patierno, senior engineer and James Isca engineer, Norair Aero and Propulsion Sciences, spoke on "Instrument Flight Simulator Study of the VTOL (Vertical Takeoff and Landing) Controllability-Control Power Relationship."

Three other Norair scientists gave papers on June 15. William Chew, engineer, Aero and Propulsion Sciences, discussed "Experimental Results of a Cryogenic Heat Exchanger"; Alan Kidd, head, Astronavigation Laboratory, spoke on "Terminal Maneuvers for Satellite Ascent Rendezvous"; and Dr. L. R. Fowell, supervisor, Research and Advanced Systems branch, presented a paper titled "Flow Field Analysis for Lifting Reentry Configurations by the Method of Characteristics".

Other engineering Norcrafters serving as panel coordinators during the scientific meeting included Harold Tombach, supervisor, Defense Systems branch; W. G. Stuart, chief, Advanced Manned Aircraft Systems; Charles Kelber, supervisor, Military Space and Technology branch; and Innes Bouton, senior technical specialist, Dynamics and Loads.

The Advancing Technologies

Capsule remarks by Norair Norcrafters at the IAS-ARS meeting:

Welko Gasich: ". . . Application of Laminar Flow Control to the lifting surfaces (wings and empennage) of supersonic aircraft is now under investigation at Norair.

". . . Wing surface temperatures (with LFC) could be reduced as much as 100 degrees Fahrenheit. This introduces the feasibility of construction materials other than steel.

"Gross takeoff weight (with LFC) for a 450,000-pound design could be decreased by 60,000 pounds or, 700 nautical miles could be added to a design range of 3500 nautical miles . . ."

Dr. Werner Pfenninger and J. E. Wieder: . . . "In order to take full advantage of the friction drag reduction through boundary layer suction, it is desirable to reduce induced drag by increasing the wing span.

"Wing fuel volume is, in general, considerably larger for the optimized low drag suction airplane than for the corresponding turbulent airplane.

"Surface irregularities cause velocity fluctuations in the laminar boundary layer which may lead to transition. Allowable limits in roughness and gaps have now been established through wind tunnel models and in-flight tests . . ."

Lee Ohlinger: "The day of intuitive management is passing and new scientific management techniques are providing the opportunity for intelligent and realistic decision-making—not only in industry but also in the Air Force . . .

" . . . The WSPACS (Weapons System Programming And Control System) study program set up by the Air Force is the joint effort of operations research teams from six of the maior aerospace companies, with Northrop as the coordinator. The resulting mathematical model provides Air Force management with a new tool for specific decision-making which is being readied for testing by AF contractors . . . "

Dr. W. E. Cox and W. W. Harter on one shot missions for the least cost: "One successful shot may be regarded as the sum of three principle costs. (1) Project development costs; (2) the

(Continued on Page 3)

TAKE DOTY OR YUKON DURING PRAIRIE JOB

The pedestrian crossing over the Pacific Electric tracks at Doty has been opened to automobile traffic during the hours 6:30-8 a.m. and 3:30 to 5 p.m., the News is informed by Facilities Engineering.

This is to relieve congestion at Broadway and Prairie during widening and paving.

Norcrafters should use, if possible, Doty or Yukon until the Prairie work is finished.

Open House, July 9, For NRC 14th Annual Art Show

There will be an open house at Norair, Sunday, July 9, for Norcrafters, their families and friends to come and see NRC 14th Annual Art Exhibit.

Time of the open house is from 1 to 5 p.m.

The exhibit will be in the main cafeteria. Entry and parking will be through Gate 5 on Broadway.

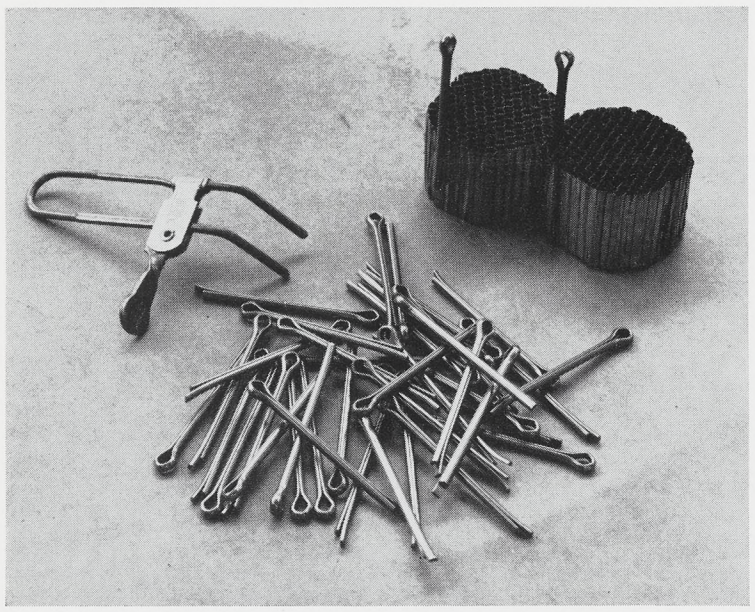
Crenshaw cafeteria sweepstakes voting on the exhibit took place last week, June 16. Voting at the main cafeteria will be held June 29.

Winners will be labeled and ribboned.

All paintings will be returned on Monday, July 10.

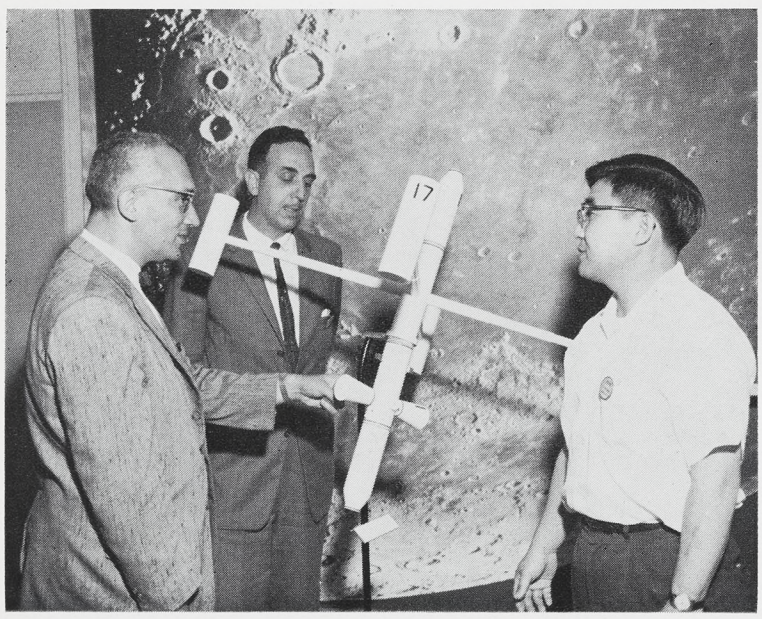
Norcrafter $$$ Idea

SUGGESTION CLASSIC — The problem in Norair's new brazing facility was with jigging honeycomb cores for the B-70 bomber. Practice was to use camming action clamps to join the various segments of honeycomb together. Hundreds were required. Very expensive. Irv Kohlhoff, 5511, got an idea. Here he discusses the matter with Foreman Matt Kinney.



THE IDEA—Why not use cotter pins, Irv wanted to know? Why not indeed? Once tried, the lowly but plentiful cotter pin proved ideal for the job. Irv's idea is paying off. Committee is now evaluating.

Space R & D Team

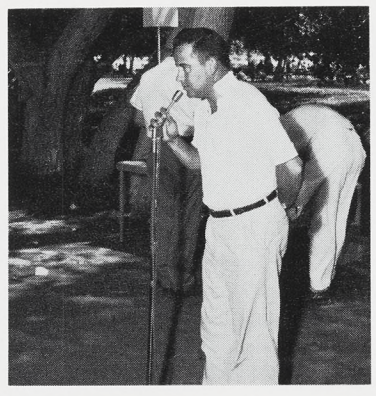


CONTRACT—Their research leads to new space contract with AFSC. At left and at right are Arnold Tuckerman, Sealant and Elastomer group leader, and Victor Mizuno, both of Materials Research Laboratory. Center is Philip D'Anna of Structures Research. Work will be in sealants.

Antelope Valley Picnic

CURTAIN RAISER—Norair Plamdale and Edwards picnic rang up the curtain on the potato salad-ice cold lemonade-sack race circuit for 1961. Held at Rivers End Resort, Soledad Canyon Road, the affair kept Antelope Valley folk in the state of high activity all day. Photo shows the start of the traditional sack race. V-P George Douglas and daughter, near right, were among the enthusiastic Norcrafters taking part.

TOM McCRACKEN and Bob Lloyd on host committee.



JACK FARLEY bade everyone welcome.

DICK HORNER complimented on test and production.

BOAT RACE (?)—Provides foot wetting opportunity.

WITH SPOONS — Off and running — at Rivers End.

THE ANTHONYS — Sally, Nancy, Major, Mrs., Gary.

CHOW TIME—Barbecued beef with all picnic fixings helped make the day complete.

JOHN B. CLARK NAMED DIRECTOR NAVY LEAGUE

John B. Clark, director, Norair Industrial Relations, has been named a member of the board of directors for 1961 of the Beverly Hills Council, Navy League of America.

Dr. Frank G. Nolan, has been made president of the Council.

Other newly appointed directors include Governor Edmond G. Brown, Rear Admiral R. W. Berry (Ret.), Lyman Garber, Dr. Reuben Levy, Martin Pollard, Walter Schaefer and outgoing president, Richard N. Cousineau.

Installation took place at a dinner dance at the Los Angeles Press Club.

LEO RICHMAN AT STATLER

Leo Richman, chief, Records Management, Administrative Services, addressed the Western Conference, Systems and Procedures Association, May 25, at the Statler Hilton. He spoke on "Recent Developments in Reports Control and Records Management."

On June 14, Mr. Richman spoke to the management group of Librascope Corporation, Glendale, on "Records Management at Northrop-Norair."

Norcrafters Invited to Tour Redondo Lifeguard Office

Personnel Activities has completed arrangements to tour the Los Angeles County's Lifeguard Services headquarters at Redondo Beach, it has been announced by Charles Boyle, supervisor.

The tour will take place next Saturday, June 24.

The tours are limited to 100 persons. Norcrafters are asked to make registrations at Personnel Activities without delay.

The visit will be for one hour, starting at 9:30 a.m. Communications system, rescue equipment and guard methods will be subjects for briefing. A series of film slides will explain riptides, rescue techniques and vital water safety practices.

"The tour will be of interest to all age groups," stated Mr. Boyle. "It should be very beneficial to scout groups and similar organizations. Norcrafters who sponsor such groups should advise us how many they would like to bring.

"If this first visit can not take care of all who would like to go, additional tours will be arranged as soon as possible," he concluded.

Northrop-Norair News

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NORAIR DIVISION

CHARLES BRADFORD, Editor

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NEWS BRIEFS

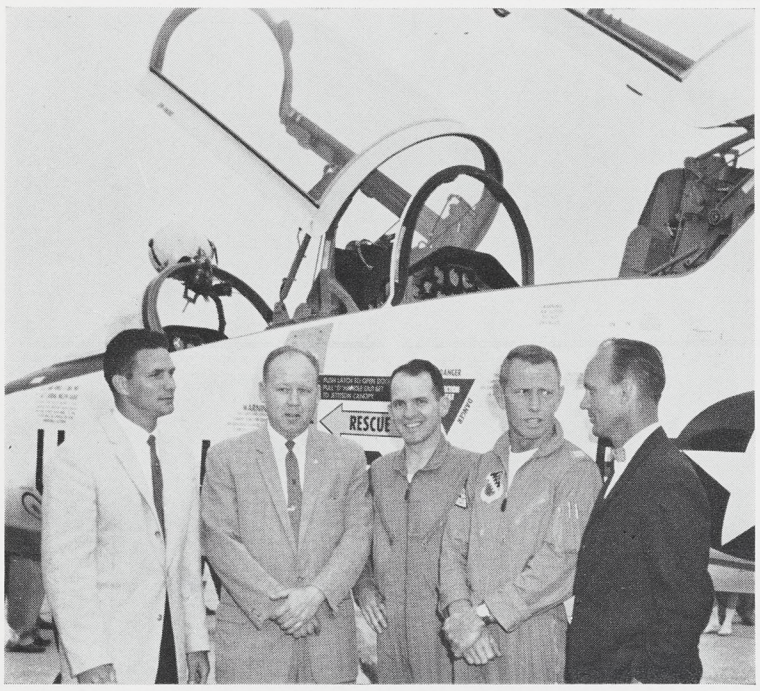
(Continued from Page 1)

THE C-141 — Norair Vice-presidents Bob Lloyd, Manufacturing; and George Douglas, Engineering visited Lockheed-Marietta last week for discussions on the new Air Force C-141. The C-141, now under development by Lockheed will be a large high-speed jet cargo-troop carrier. Norair seeks to participate in this project as a subcontractor. Norair's demonstrated capability as an outstanding subcontractor should put us in a good competitive position on bidding this work.

B-70 BRAZING CONTRACT—Bob Lloyd, vice-president, Manufacturing, announces that the Division has been awarded an additional order from North American Aviation for 30 more B-70 stainless steel honeycomb panels. The panels will be brazed in Norair's new stainless steel brazing facility—see Norair News, 29 March 1961 . . . First order for 71 panels is 20 per cent complete. Deliveries on the new order will commence in early September of this year. While the first panels ordered were flat and of moderate size, the new order is for larger sizes and for more complex shapes, including both simple and compound curves, Mr. Lloyd stated. Norair equipment, capability and schedule performance for this highly advanced state-of-the-art remains unique in the aerospace industry.

NUCLEAR PROMISE—*Washington (AFNS).* "When the uses of nuclear energy for rocket propulsion become feasible, man will control for the first time the energy needed to travel freely wherever he pleases in space," said Atomic Energy Commission Chairman Glenn T. Seaborg recently in a speech at San Francisco.

"What is now science fiction may become reality. On the basis of present scientific knowledge, I believe that nuclear propulsion could provide the most feasible means of accomplishing long voyages in space," he added.



FIRST T-38 AT MAAMA—Photo, taken at Middletown Air Materiel Area (Olmsted AFB) shows T-38 that took part in Armed Forces Day show. From left are Wes Redding, General Electric; Bob Keleher, Norair representative; Captain Truett B. Smith, T-38 Supply, Middletown; Captain Bert Lethbridge, Air Force project officer on the Army's man-machine; and Milt Rogers, Norair representative. T-38 fly-over at MAAMA was high point of the day.

PRESQUE ISLE HONORS—Colonel R. W. Beck, commander, 702nd Strategic Missile Wing, Presque Isle, left, did honors at recent Presque Isle Air Force Base bowling awards. Here he presents first place trophies to Norair Tech Rep Walt and Mrs. Maschke and Sergeant and Mrs. Dick Holubek. Colonel R. A. Stevenson is 702nd's new commander, Colonel Beck being recently reassigned.

Capsules

(Continued from Page 1)

cost of any reliability improvement program undertaken; (3) the cost of fabricating and launching a sufficient number of vehicles to result in the desired probability that at least one shot will be successful . . .

"Considerable savings in overall costs are possible through systematic tradeoff calculations.

"For complex vehicles, the optimum reliability improvement may be 50 per cent of the total mission cost."

Walter Darby: . . . "When a space vehicle is accelerating during an orbit changing maneuver, the flight path is effected by local gravitational fields. If thrusting lasts for a significant time, accurate astrogation demands that account be taken of this effect."

Alan Kidd: . . . "In order to assemble two or more units in space such as a space station; first one unit is launched into orbit, then another unit is launched and coasts up to the orbit of the first. The second unit must be launched to arrive at the first unit's orbit altitude very close to the time the first unit passes by. This paper describes a way of determining where to aim the second unit and develops an optimum steering program . . . "

Officials' Precedence Listed

Following is a list of Department of Defense officials in order of precedence:

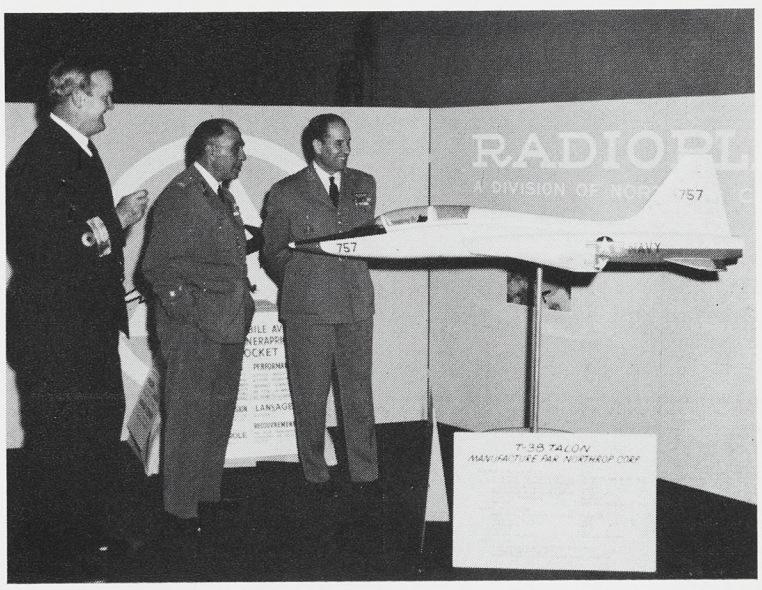
1. Secretary of Defense.
2. Deputy Secretary of Defense.
3. Secretary of the Army.
4. Secretary of the Navy.
5. Secretary of the Air Force.
6. Director of Defense Research and Engineering.
7. Chairman, Joint Chiefs of Staff.
8. Chiefs of Staff.
9. Commandant of the Marine Corps.
10. Five-Star Generals and Fleet Admirals.
11. Assistant Secretaries of Defense.
12. Under Secretary of the Army.
13. Under Secretary of the Navy.
14. Under Secretary of the Air Force.
15. Generals and Admirals.
16. Assistant Secretaries of the Army.
17. Assistant Secretaries of the Navy.
18. Assistant Secretaries of the Air Force.
19. Assistants to the Secretary of Defense.
20. Lieutenant Generals and Vice Admirals.
21. Deputy Directors, Defense Research and Engineering.
22. Deputy Assistant Secretaries of Defense and Deputy General Counsel.
23. Deputy Under Secretaries of the Military Departments.
24. Major Generals and Rear Admirals (Upper Half of List).
25. Deputy Assistant Secretaries of the Military Departments.
26. Assistant Directors, Defense Research and Engineering.
27. Heads of Offices, Office of the Secretary of Defense.
28. Brigadier Generals, Rear Admirals (Lower Half of List) and Commodores.

—*OCI US Army*

Suggestion Honor

NORAIR SUGGESTION PLAN announces new honor to be given to Division top suggester of the month and his foreman. Rodin's Thinker, symbolic of deep concentration, comes as tie clasp for foreman, key chain for idea man. Rodin's Thinker is world-famous classic by noted French sculptor Francois Auguste Rodin who lived in the last century. Decorations are on display in Suggestion Award office, Tooling Building.

NATO and the T-38



NATO AND THE T-38—Military Committee of the North Atlantic Treaty Organization, representing 15 NATO nations, recently toured U.S. military installations, viewed latest in American weapons system. Here, aboard aircraft carrier USS Independence, they see scale model exhibit of T-38 Talon trainer. From left are Commodore John K. Watkins, Royal Navy; General J. A. R. Beleza Ferraz, Portuguese Army; and Major General Jose da Ponte Rodrigues, Portuguese Air Force.

Norcrafters Share Praise For AIA Work On "Forecasts"

Norair Manufacturing Research and Development personnel share in high compliments recently paid to the Aerospace Industries Association by Lt. General Mark Bradley, deputy chief of staff, Materiel; and Major General W. B. Keese, director of Development Planning.

General Bradley and General Keese have written letters of commendation to the AIA for the work of the Association's "1960 Aerospace Forecast of Technical Requirements."

Manufacturing R&D has been on the "Forecast" editorial board for over two years.

"An excellent job," General Bradley stated. ". . . The quality of presentation and completeness of data contained in the forecast have improved year by year . . ."

General Keese stated, ". . . The AIA document ranks very high in the professional esteem of the Directorate staff. The additional copies you have provided will be used as prime examples of enlightened technical guidance and crisp, easily understood literary style."

PASTEL AND CALDWELL ON CONTROLS

Dr. Marvin Pastel, specialist, Automatic Engineering Controls and E. C. Caldwell, supervisor, Controls and Inertial Systems branch, spoke before the Aerospace Division of the American Institute of Electrical Engineers.

The meeting was held at the IAS Auditorium.

Subject of Dr. Pastel's address was "The Principles of Self-Adaptive Control Systems" in which he discussed the basic philosophy of design and presented classic examples.

Mr. Caldwell spoke on "Applications of Adaptive Principles to Aerospace Vehicle Control Systems". He discussed techniques of application to both open and closed loop control systems and nonelectronic systems.

RIDES WANTED

7 a.m. — 3:45 p.m.

ORANGE & 37TH ST., Long Beach. G. J. Grummer, ext. 2574, GA 4-6383. 2

LA BREA & PICO, Los Angeles. Earl Comstock, ext. 527, WE 4-8890. 2

INGLEWOOD AVE. & 164TH ST., Redondo Beach. Harriet Chaney, ext. 2170, FR 2-6082. 2

AVALON & 223RD ST., Torrance. Satch Heard, TE 4-0953. 2

7:30 a.m. — 4:15 p.m.

CARSON & WESTERN, Torrance. Evelyn B. Stephens, ext. 713, 714, FA 8-4105. 3

VERMONT & MELROSE, Los Angeles. Robert Rivera, ext. 1222, NO 1-8814.

8 a.m. — 4:45 p.m.

LA BREA & 64TH ST., Inglewood. C. Alper, ext. 1436, AX 3-7515. 5

RIDES OFFERED

7 a.m. — 3:45 p.m.

AVALON & 223RD ST., Torrance. Satch Heard, TE 4-0953. 12

7:30 a.m. — 4:15 p.m.

IMPERIAL HWY. & STUDEBAKER RD., Norwalk. George Nosacka, ext. 788, UN 4-7673. 13

8 a.m. — 4:45 p.m.

LA BREA & 64TH ST., Inglewood. C. Alper, ext. 1436, AX 3-7515. 15

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

GAS RANGE, 36", Kenmore, clock, timer, griddle, broiler, $60. OR 0-0056. A

UTILITY TRAILER, 4x4x7, $50. PL 4-9131.

GO-KART, 2½ hp Clinton eng., padded seat, $50. UN 4-7673. A

GLASS BOAT, 12' Elgin, 1960, 7½ hp Elgin motor, $300. DA 3-2242. A

DINING ROOM SET, French Provincial, solid walnut, 7-pc., $50. PL 6-4978. A

TRANSISTOR THEREMIN, w/cabinet & stand, $50. OS 6-2803. A

DROP AXLE, wheels & tires for boat trailer, 75" between wheels, $15. FR 8-3990. A

PHONIC RECORDS, 4, 45 rpm, $20; TV, 17", w/cabinet, $23; brake control, Warner, elec., $5; oil filter, Delux, truck-type, $7. FA 8-5958. A

BICYCLE, boy's, 26". Schwinn, new paint, $25. PL 6-9697. A

PLYMOUTH, 1954, 4-dr. sedan, $200. FR 2-1696. A

BABY EQUIPMENT, crib, mattress, $15; stroller, $5; car seat, $2; baby scales, $3; steel clothes poles, 2, 2", $3. FR 9-5690.

VALVE REFACER, w/¼ hp GE motor, $25. OR 2-1064. A

LAPEL PIN, Eastern Star, Masonic, w/6 diamonds, $75; bicycle, $20; lawnmower, $10. EX 1-2040. A

HOUSEHOLD FURNISHINGS, washer, deluxe, Model 80, Kenmore, $200; stove, Kenmore, $35; refrigerator, Westinghouse, $35; twin beds, foam rubber mattress, Bates Heirloom spreads, $100. DA 9-0617. A

SAILBOAT, 10', Sea Scouter class, glass laminate, w/nylon sail, free instructions, $249. OS 6-8663. A

GO-KART, 4 hp eng., $65. OS 6-6390.

VACATION TRAILER, 15', Shasta, Butane, w/oven, stove, elec. brakes, $545. DA 9-2734. A

PONTIAC, 1948, r/h, good trans., $50. ME 0-3888. A

CAMPING TRAILER, folding-type, sleeps 4. Butane equipped, $195. OS 5-2159.

INNERSPRING MATTRESS & SPRINGS, $8; doll beds, $2 ea.; bedframes w/casters, 2, steel, $3 ea.; bed spring, twin-size, hvy. steel, $4. FR 4-8036. A

CHEVROLET, 1949, 2-dr. sedan, mechanically excellent, needs right rear fender, $100; lawnmower, Reo, 4-cycle, gasoline-type, $45. PL 5-9075. A

BICYCLE, men's, 3-spd., Schwinn, 2-yr.-old. $30. FR 7-3487. A

SWING SET, 3 swings, glider, & slide, $25; folding table, Coleman, & chairs, $10; youth bed & chest, $20. FR 5-0747.

BABY FURNITURE, 1 set, chrome, makes into 9 items, $90. OS 9-2433. A

RANGE, Wedgewood, w/rotisserie, chrome top, $100. FA 1-3923. A

KILN for ceramics, large size, portable, $45; RCA radio-phonograph comb., mahogany, $75. AX 1-6653. A

MOTORCYCLE, 1959, Triumph, trophy w/bonnie head, take over payments, $300. DA 3-0979. A

WASHING MACHINE, wringer-type, $15. OS 5-3866. A

TRAMPOLINE, 4'x6', $20; trumpet & case, student-type, $15. OS 6-8331. A

HOLLYWOOD BED, full-size, box spring & mattress, $45; dresser & mirror, oak, $55; wood chest, Chinese camphor, large, $125. TE 1-2077. A

MOTORCYCLE, Ducati, 1960, 100 cc. $240. DA 4-1793. A

HOUSE DOORS, 78"x32", 3, 50¢ ea.; motor, ¼ hp, Westinghouse, $5; tricycle, $4; rocker, child's, $2. PL 7-2753. A

MERCURY, 1954, 2dr.; htp., r/h, w/w, new trans., $395. FR 2-0126. A

RANGE, Gaffers & Sattler, w/oven timer, clock, electric lite, stainless steel top, $50. Box 1502. A

RUNABOUT, 12', 2 seat, Class C, Mercury outbrd., w/quick silver racing unit, needs some work; trailer, Bellinger, expandable-type. $150. OS 6-6108. A

STEEL CABLE, 210', ⅜", $15; inside doors, $1 ea.; posthole digger, Choremaster, $75; aluminum shower, $10; clothesline posts, iron "T," $2 ea.; windmill pump & cylinder, $10. VE 7-4237.

BUICK SUPER, 1956, conv., w/w, full pwr. equip., $695. OS 6-2383. A

DODGE, 1947, 4-dr. sedan, w/heater, good tires, $85. OS 9-6043. A

VIEW LOTS, level, adjoining, in Cuddy, Calif., (Fraser National Park). $2450 ea. EA 2-0677. A

RADIO - PHONOGRAPH, console model. Early American cabinet, phono. needs repair, $40; floor furnace, gas, w/thermostat, $75. OS 6-5921. A

WANTED TO BUY

CEMENT MIXER, 1/3 sack capacity or larger. EA 2-5136. B

LAMP, Desert Dri-Air. DA 6-5558. B

NRC Vignette #11

NRC Riding Club

THE NRC RIDING CLUB—Deep in the traditions of the Old West, when vaqueros and cowpokes rode range on the sunny slopes of Southern California, is the NRC Riding Club. A classy organization, proud of their good horsemanship and fine outfits, this Club combines the social side, the civic side, and the outdoor side. One weekend they will ride on the trail for a campfire breakfast and western ballad sing, the next weekend they will take part in a Southland parade riding in precision formation under the banner of the NRC. Photo taken on a typical parade day shows from left Jackie Hill, Orita Statley, Linda Payne, Maxine Lietz, Wayne Littler, Charles Wheeler, Marsha Cook (in front), J. W. "Tex" Statley, commissioner, Milton Sue, Vickie Cook, Colleen Reardan, Mary Hill, Vickie Burrows, and Joe Black. Last year in parades, the Club took five first places, one second place, and were awarded two special trophies. This year, so far, they have won seven first place awards, last one being at a Fontana celebration. Their trophies are being displayed in the main cafeteria this week. All Norcrafters are cordially invited to participate in this fine and healthful activity. Call Personnel Activities for details. The Riding Club meets every fourth Sunday at the Western Avenue Country Club. Time, 4 p.m.

VACATION MAPS NOW AT P-A

Do you know how to get there?

Wherever you are going on your vacation, that is?

Whether you do or not, a fine thing to have just in case is a map.

Personnel Activities is now offering a United States tour map service to all vacation-taking Norcrafters.

Comes in a package. They furnish a map marked with your tour route, maps of states and major cities through which you will travel, pamphlets on scenic points of interest, plus sundry travel information.

Drop in at any Personnel Activities office or call extension 2784. Give them your itinerary and date of departure.

Allow three weeks for your map package to be made ready.

Free! Swimming

NORCRAFTERS AND FAMILIES

Tuesday, Wednesday
Thursday
4:45 — 7 p.m

Leuzinger Pool

Starting June 27
Ending August 24

RENTALS OFFERED

APT, duplex, children & pets O.K., large yard & patio, $65 mo. OS 9-5153. E

NEWPORT BEACH COTTAGE, sleeps 4, $50 wk. OR 0-4424. E

APT, 2-bdrm., w/garbage disposal, garage, fenced yard. $100 mo. Box 1501. E

APT., Redondo Beach, 1800 sq. ft., 3-bdrm., fireplace, built-ins, new carpets & paint, $225 mo. FR 5-4762. E

CHILD CARE OFFERED

BABY SITTING in my home, day or nite, hourly or weekly. DA 9-0469. G

PERSONALS

RESPONSIBLE PERSON to drive a 1959 Fiat to Washington, D.C. OR 1-9312. L

FOR SALE OR TRADE

PICKUP, Dodge, 1957, ½-ton, 6 cyl., $895 or will trade. GA 4-6383. M

PUPS, German Shepherd, reg., 10-wk.-old, blk., tan & silver, had shots, $25; fireplace screen, pullchain-type, solid brass frame, modern, $14, or trade for equal value. DA 4-3195. M

CHEVROLET V-8 3-spd trans., $60, or trade for 4:56 center section in good condition. FR 6-2110. M

Europe Next For NRC Gads, Price $889

October, just four months away, will be Europe time for the NRC Travel Club.

Howard Cornelius, Travel Club commissioner, has called a meeting tomorrow night at the NRC Clubhouse to discuss and plan the continental holiday. Time of the meeting is 7:30 p.m.

Some specifics on the trip:

It will cover seven countries.

It will be for 23 days.

Price will be $889. The same regular non-chartered tour would cost $1155.

Itinerary will be from Los Angeles to London, then to Holland, then Germany, Switzerland, Italy, France, and home.

Deposits for reservations are now being taken at Personnel Activities. "The charter is secured," says Howard.

Also at the Clubhouse meeting tomorrow night, a complete report will be made of the recent trip to Hawaii.

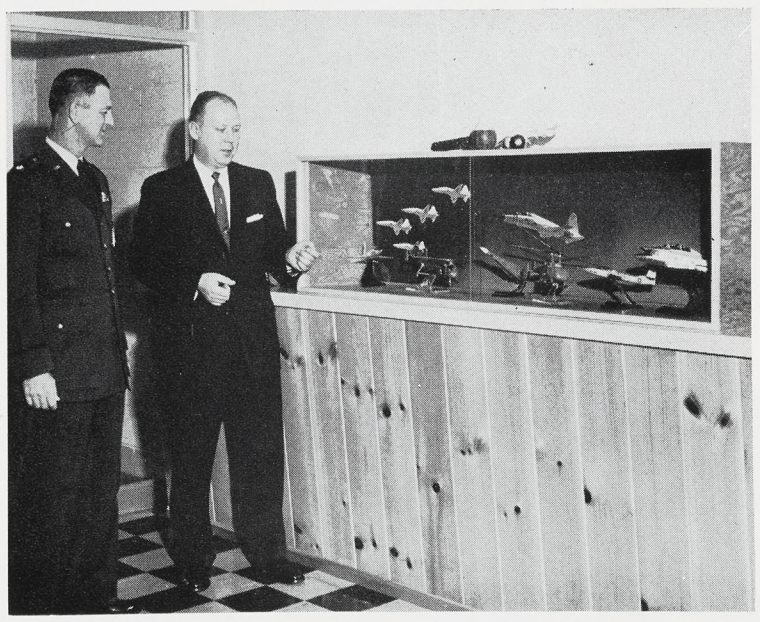
NRC SKIN DIVE CLUB PLANS TRIP TO MEXICO

NRC Skindiving Club, Ralph Gonzales, commissioner, announces that plans are in the works for a July 4 holiday trip to Mexican waters.

Preliminary discussions were held at a meeting last night in the NRC Clubhouse.

To participate in Skindiving Club programs, call Personnel Activities, extension 2784.

Olmsted Air Force Base



AT OLMSTED AIR FORCE BASE—Major Russell M. Hogan, USAF provost marshal and Bob Keleher, Norair representative, admire model showcase in Air Police headquarters. Mr. Keleher provided T-38 models and print of Talons in flight. In appreciation for his interest and cooperation, base personnel presented Mr. Keleher with duplicate showcase to house his personal models, also wrote letter commending him to Corporate Vice-president and Norair General Manager Dick Nolan.

Rumble Rumble Boom

IT'S COMING

Roaring '20s "Bowling Ball"

JULY 22

NRC Clubhouse

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, July 5, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

Norair Helps Make LAX Dedication a Success

HEADLINERS AT THE SHOW—NRC Symphonaires and the T-38 Talon pose proudly during the dedication of Los Angeles' new International Airport. From left are Jackie Athy, Lillian Lubie, Cherylana Reeder, Lillian Reeder, Helen Longpre, Shirley Smutz, Darlene Sage, Anne Newcomer, Bea Boggess, Etta Mae Graser, Georgia Anderson, Victoria Bracher, Marge Brunk, Phyllis Thomas, Audree Wilson, Phyllis Olmstead, Margaret Athy, Charlotte Salomon, Charles Nixon—director, Roger Williams, Bart Thomas, Walt Thompson, Keith Smeltzer—Nortronics commissioner, Warren Gearhart, Orv Markles, Doug Weeks, Mark Foss (behind), Ron Henderson, Norair commissioner, Gordon Reeder, and Burt Bracher. T-38 was flown from Palmdale to LAX for the event by Major Jim Anthony, AFPR office. At takeoff Sunday night he thrilled crowd with near vertical climb—6000 feet by the time he reached Sepulveda, 15,000 feet by the time he passed the new tower, all this still over the runway!

NEWS BRIEFS

NORAIR DIVISION PLAN — Division management headed by Corporate Vice-president and Norair General Manager Dick Nolan, will review Norair Division Plan with decisions to be reached by 1 August . . . Management will have looked at all existing projects, projects getting under way and future undertakings. Facility and added capability requirements will be carefully charted. All areas and system endeavors will be covered, principally manned aircraft, missiles, space, Division research, research & development, study contracts, subcontracts, site work, ground systems, commercial activities . . . Norair Division Plan guided by overall corporate direction undergoes quarterly and yearly assessment. Projections are for one year, five years and longer . . . Reports and support data for Division Plan sessions were prepared by Management Planning Council. Complete preparation required five months.

(Continued on Page 3)

Don Dwiggins Calls T-38 "Safest Jet in Service"

Don Dwiggins, Los Angeles Mirror aerospace editor, last week called the T-38 trainer, "safest of all jets."

Don went for a ride in the Talon from Palmdale in Febru-

ary of this year. At that time he wrote, "There it was—the ship I'd dreamed of . . . "

To quote from his recent story:

"When America's space cadets get their first rides in the Air Force's hot new T-38 supersonic trainer next September they'll be flying the safest jet in service.

"This was revealed as the deputy inspector general of the Directorate of Flying Safety at Norton Air Force Base reported the Northrop T-38's pre-operational performance.

"In more than 2150 flights totaling in excess of 2223 hours flying time, the Hawthorne-built Talon has never been involved in a major flight accident.

"This is the first time a new jet has gone through its rugged shakedown without a serious setback.

"The twin-engine T-38 is the first jet to go through the USAF's new three-category system of acceptance, from factory to flight line.

"The trainer entered its final transition phase at Randolph Air Force Base, Texas, on March 1. It now is being used to train instructors.

"This fall, fledgling pilots with their eyes on outer space will begin flying lessons in thoroughly checked out Talons, pace-setters in a new era of space-aviation."

District Rep Assignments Announced

The Corporate office has announced that Dan Collins, manager of the Ogden office, has been reassigned as manager of the San Antonio office where he will represent the Company in product matters with the Air Training Command and other military establishments in the area.

The change was effective June 16.

Frank Poelking will be in charge at Ogden until August 1 at which time the office will be discontinued.

It has also been announced by Corporate Vice-president and Norair General Manager Dick Nolan that N. E. Goode, jr., has been assigned as engineering representative to the Eastern District office, Washington, D.C. where he replaces W. J. Oakes.

Mr. Goode will report to George Douglas, vice-president.

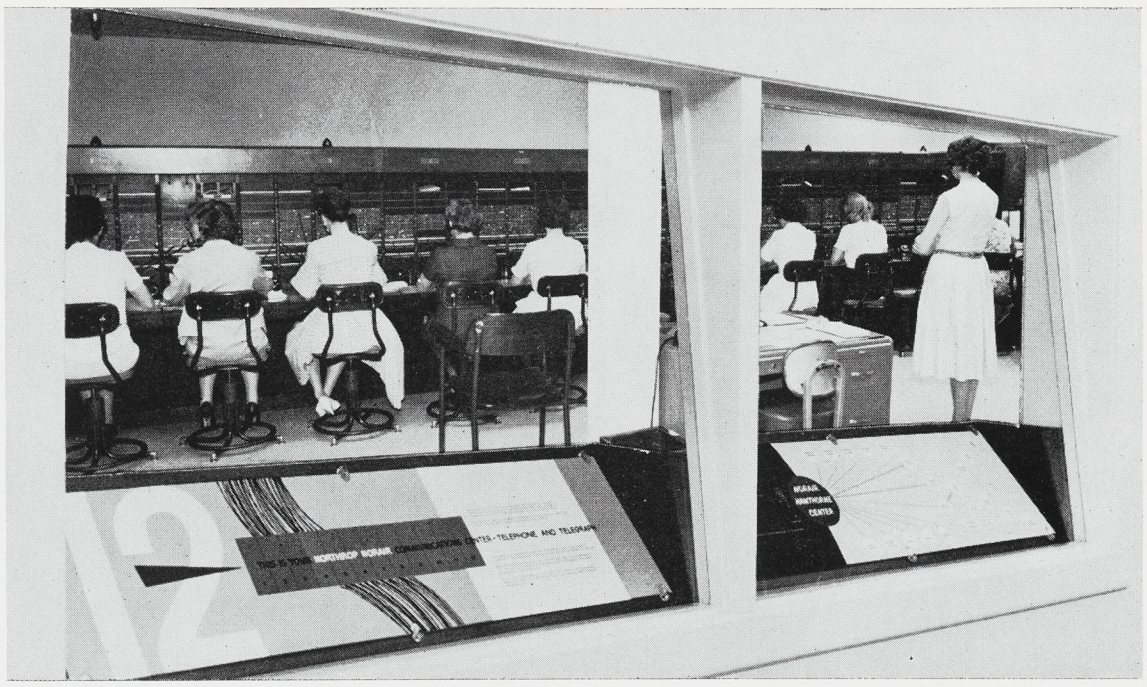
(Continued on Page 3)

LATEST IN AEROSPACE—Wide-eyed crowd saw nation's latest advances in aerospace products. Here USAF sergeant from Inglewood recruiting office explains features of the supersonic Talon. Young fry, teenagers, adults and oldsters, came to see. Vice-president Lyndon B. Johnson spoke on Sunday.

AT SATELLITE SEVEN—NRC Symphonaires sang on Saturday by special invitation. Here director Nixon conducts. Numbers included Oklahoma, Battle Hymn of The Republic, Let There Be Peace, Brigadoon, Sound of Music. Symphonaires sang for one hour.

He Named the Talon

MAN WHO NAMED THE TALON—Lieutenant Larry Hewitt, flight instructor, Craig Air Force Base, Alabama, kneeling at right, was at Palmdale recently for a ride in the airplane that he named in the contest conducted during fall of 1958. Recongratulating Lt. Hewitt are from left, standing, Mike Corba, chief, USAF T-38 Projects, Marketing; Major Jim Anthony, Northrop AFPR office and pilot for the ride; and Lew Nelson, Norair director, Flight Test. Kneeling front left is Lieutenant Thomas Reinhart, who accompanied Lt. Hewitt to Palmdale. Lt. Hewitt's suggestion the "Talon" was picked over 5000 other entries. Prize was $1000 bond or a vacation of his choice. He took the bond.



TELEPHONE ROOM'S NEW WINDOW—Something new has been added to Norair's Telephone Room, namely, a display window in the main hall of Plant One where passersby can see our efficient "hello" girls at work. Window, similar to the one in Engineering and Science Centers' Computing and Datamation Facility, shows Division's communications nerve center. On an average 16,000 calls are completed daily. Olga Blanchard, lead girl, stands at right. Also incorporated in the window are display cards outlining significant information on the system.

CERTIFICATE OF COMPLETION — Northrop Corporation Senior Vice-president Dick Horner, presents certificates of completion to USAF Captains I. Valdez and R. E. Griffin. The two captains recently completed a year tour of duty at Norair in Air Force Training With Industry program. Captain Valdez has been assigned to Albuquerque Air Procurement Office, Kirtland AFB, New Mexico. Captain Griffin has been assigned to the AFPR office, Space and Information Systems Division, North American Aviation, Downey, California. Both men made many and lasting friendships at Norair. "This has been our home away from home for over a year," they stated on departure. "We wish to express our most sincere appreciation for being permitted to participate in your fine program. Our stay at Norair has proved to be industry education in the most complete and gratifying sense."

Major General Toftoy Made Company Science Consultant

Major General Holger N. Toftoy, U. S. Army, retired, internationally-recognized authority in military advanced research and technology, is now a consultant on scientific and technical matters to Northrop Corporation, it has been announced by Thomas V. Jones, president.

General Toftoy will serve as advisor to Northrop's advanced research and scientific people, Mr. Jones said.

General Toftoy retired last year following a distinguished military career that included assignments as commanding general of Aberdeen Proving Ground and Redstone Arsenal and deputy commander of the U. S. Army Missile Command. General Toftoy graduated from the U. S. Military Academy in 1926. He was promoted to major general in 1952. His decorations include the Legion of Merit, Bronze Star, Croix de Guerre (France) and the Distinguished Service Medal. In recognition of his contributions to missile development, the American Rocket Society conferred the James H. Wyld award upon him in 1958 for "outstanding application of rocket power," and in 1960 the American Ordnance Association awarded him the Levin H. Campbell Gold Medal.

Norcrafters Serve Key Roles in IAS

Norcrafters who are serving in official capacity with Institute of the Aerospace Sciences for 1961:

George Douglas, vice-president, Engineering, is a member of the advisory management committee which is composed of outstanding leaders in industry.

Charles Eyres was chairman, national IAS-ARS joint meeting committee.

R. E. Clooney is chairman of the membership committee.

M. A. Pritzkat is chairman of the security committee.

Seventeen other Norcrafters are serving on various operating committees.

The Institute of the Aerospace Sciences is a major professional society of aeronautical and space engineers and scientists.

The Los Angeles section with 3600 members is the largest group in the national organization and comprises 24 per cent of total membership.

HUMAN FACTORS MEET CHAIRED BY SPICKARD

William Spickard, specialist, Norair Human Factors Engineering, served as chairman of the Los Angeles State College symposium on human factors research.

Joint sponsor of the meeting was Human Factors Society of Southern California.

Speakers included scientists from Hughes, Systems Development Corporation and Space Technology Labs.

Northrop-Norair News

VOL. 19 No. 16

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A NORTHROP CORPORATION PUBLICATION
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NORAIR DIVISION

CHARLES BRADFORD, Editor

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ALSO NEW is Norair's Telex equipment, a part of RCA's European system which ties Northrop Corporation directly to the Paris office. Equipment which was installed in May provides a direct line, will eventually be widened to tie in the entire continent with instant transmission of company messages. Standing is Lead Girl Jean Gill. Seated are operators Bob Keenum and Fern Ruiz. Tape code is posted on the wall above for ready reference. Actually, however, operators can read tape code as readily as we can read the conventional alphabet.

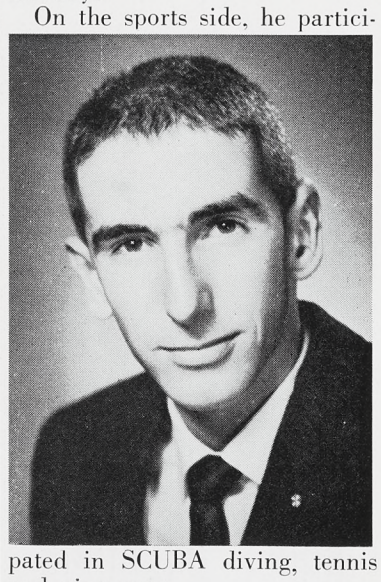
NORCRAFTERS' SON GETS ACADEMY APPOINTMENT

George Koren, son of longtime Norcrafters Andy Koren, foreman, Boeing Wing Assembly and Marvel Koren, budget analyst, Budget Administration, has recently received an appointment to the Naval Academy, Annapolis, Maryland.

George, who graduated from El Segundo High School in June 1960 and who has completed one year at Oregon University under a Naval Reserve Officers Training Course scholarship, was one of six 17th Congressional District nominees to the competitive nomination for the Academy entering class of 1961.

His appointment was one of those from the Secretary of the Navy which are selected by the Academic Board from students whose records are outstanding in scholarship and whose character and personality are established as of the highest order.

George's activities during his high school years included life member, California Scholarship Federation; business manager, school paper; member, Quill and Scroll; officer, Key Club, Kiwanis High School organization; and officer, Order of Demolay for Boys.

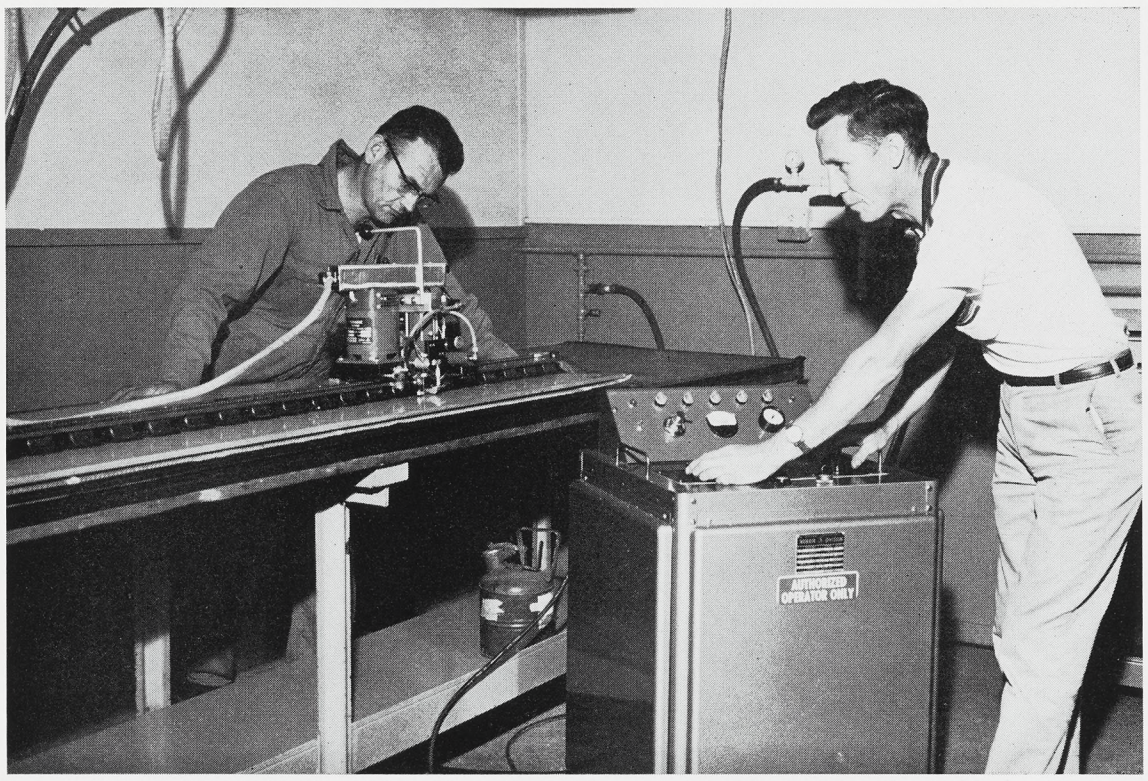


On the sports side, he participated in SCUBA diving, tennis and ping-pong.

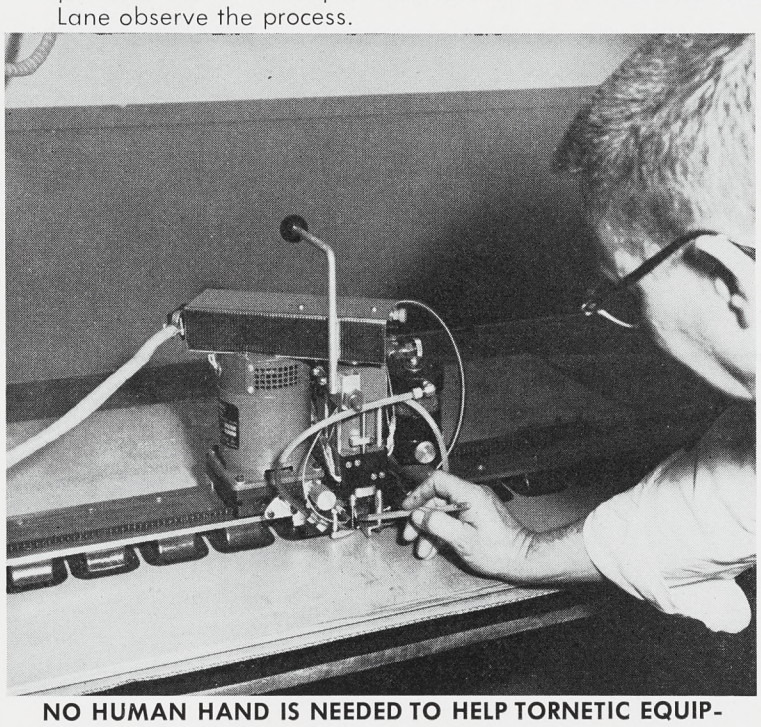
His hobbies are collecting antique guns, swords, and military accoutrements.

George has an older brother Lt. (jg) William Koren, Navy pilot stationed at Naval Air Station, Whidby Island in the state of Washington. A sister, Stefanie, is in high school.

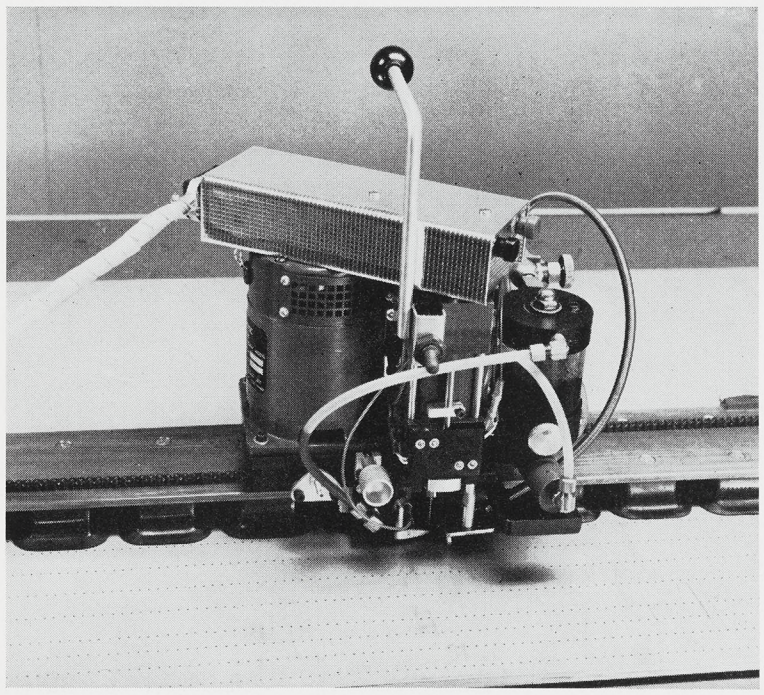
New Era in Tools for LFC



ONE BREAKTHROUGH GENERATES ANOTHER—Laminar Flow Control airplane wings being built at Norair require nearly two million .052 to .065 size holes spaced one quarter inch apart. Tool developed by Laminar Flow Control Manufacturing Engineering with assistance of Ed DeVoss, manufacturing research engineer, working in conjunction with Dyna Systems, Inc. (manufacturer of Tornetic equipment) solves the problem at 90 holes per minute. Here LFC mechanics Courtland Heckman and R. Q. Lane observe the process.



NO HUMAN HAND IS NEEDED TO HELP TORNETIC EQUIPMENT—Jack McFall, foreman, LFC Assembly, points to drill that does the job. There will be an estimated 7.4 miles of minute holes in Laminar Flow Control wings. Wing surfaces to be drilled include crowns, twists, contours, and other deviations from level surfaces. Tornetic equipment, after indexing, clings to its position by use of the vacuum cups. Machine is torque controlled to drill with equal efficiency and soft or hard substances. Drill will travel through aluminum, abrasive bonding adhesives, air, and honeycomb structure.



CLOSE UP—If drill becomes dull, torque speed and feed will automatically compensate. Provision is also made for instantaneous stopping should a drill break. Ninety holes are drilled each minute. Drills last up to 1000 holes.

Districts

(Continued from Page 1)

Engineering, on technical matters. Administratively, he will report to W. W. Millikan, Norair representative to the Eastern District office.

Also, Mr. Nolan announced that Norcrafter D. M. Badger has been assigned engineering representative to the Dayton District office.

The two appointments are effective August 1.

Mr. Badger as with Mr. Goode will report to Mr. Douglas on technical matters. Administratively, he will report to L. C Breckenridge, Division representative at Dayton. He replaces H. S. Ripley.

Both Mr. Ripley and Mr. Oakes are returning to Hawthorne for permanent assignment in the Engineering Department.

NRC BALLROOM DANCE CLUB IN NEW SESSIONS

NRC Ballroom Dance Club Commissioner Wes Williams, reminds Norcrafters that a new dance class has now started in the Cha Cha and the samba.

The meetings which began June 22 and will continue for 10 weeks will deal with the advanced steps and variations of the Cha Cha and will also teach beginning samba.

The classes are held each Thursday evening, 8:30 to 10:30 p.m. at the NRC Clubhouse, 175 North Hawthorne Boulevard.

Beginners and advanced dancers are welcome, says Wes. Bring your friends too.

M-C FORUM SET FOR JULY 11

The Norair Management Club Ed Nolan, president, will present a forum on "Alcoholism in Industry," it has been announced.

Speaker will be Earl Scott outstanding authority on the topic.

The forum will be held at 5 p.m., July 11, in the Products Display Building.

Coffee and doughnuts will be served.

Rapid City Norcrafters Near Half Thousand Mark

Norcrafters on duty at the Rapid City Titan T-2 site now number 481, it is announced by Jim Matthews, manager, Site Activation Department.

As is policy with Norair, maximum utilization of Division management and technical skills was achieved by key transfers to the T-2 site. At the same time maximum job opportunities were extended to Rapid City residents.

Of the 481 persons on the project at Rapid City, transfers from Norair number 152. Three hundred fifty-six new Norcrafters were hired at Rapid City, 22 non-Norcrafters were brought in from the Los Angeles area, and 31 were brought in from other areas.

It's Sign Up Time
July 24 — August 11
AID AND NOR-AID
See Your Organization Clerk

Breakdown of Norcrafters transferred to Rapid City shows that the average length of service is 10 years 6 months.

The oldest (in terms of service) Norcrafter at Rapid City is H. L. Miller. He came to work for the Company in January 1940.

Of the 400 men at Rapid City. 369 enjoy the state of married bliss and 31 are single. Of the 81 women, 59 have a stalwart protector in the house while 22 are single.

New Edition on Spacecraft

The National Aviation Education Council has published its 1961 edition of U.S. Aircraft. Missiles and Spacecraft, it has been announced.

Price of the publication is $1.50.

Copies may be obtained by applying to the National Aviation Education Council, 1025 Connecticut Avenue, N.W., Washington 6, D.C.

The NAEC is an associate of the National Aeronautic Association.

The annual was published at cost by the Aerospace Industries Association. It is comprised of selected pages extracted from the Aerospace Yearbook, 1961. Pages 138 and 139 are devoted to specifications and photographs of the T-38 Talon and N-156 Fighter.

CADE SHOOTS A PERFECT 100 CLAY TARGETS

Shades of Mike Fink, the Mississippi flatboat roarer!

Dick Cade, Contract Administration, shot 100 clay targets in a row at the Father's Day skeet and trap shoot at Harold's Country Club in Reno, Nevada.

This is the first known time anyone at Norair has accomplished this unusual feat. It is the fifth time of record that this has been accomplished in the annals of California Pigeon Club.

Dick is receiving an achievement award from the NRC. He also received medals and a place on the honor roll at Harold's Country Club.

GEORGE GORE ELECTED TO ASCS BOARD

George Gore, secretary and assistant corporation counsel, has been elected to the board of directors of the American Society of Corporate Secretaries, it has been announced.

Mr. Gore's appointment was made at the society's recent meeting in Coronado.

As a service to the society and to assist in understanding corporate procedures, Mr. Gore wrote and staged a one and a half hour script depicting the fictitious "Seventy-Third Annual Meeting of the Shareholders of the Cobra Mining Company."

He also participated in the education skit by playing the part of chairman of the board. The cast of the play numbered 21 persons.

NEWS BRIEFS

(Continued from Page 1)

DOD COORDINATION PROGRAM — Corporate-wide meeting was held at Norair last week as one of the first industry implementations of Department of Defense new contractor audit coordination program. Chairman and coordinator of the session was Harold Parsons, USAF resident auditor to Northrop Corporation. Key Finance, Procurement, and Contractor personnel, headed by Corporate Comptroller Joe Corie attended. DOD's new program will (1) Establish closer working relationships among government audit personnel with industry procurement officials in the evaluation of price proposals; in the negotiation, administration, repricing, and settlement of contracts and subcontracts. (2) Promote consistency of treatment of costs relating to cost-reimbursement type contracts and other cost representations or estimates of contractors and subcontractors, and coordination on contractual provisions of an accounting or financial nature. (3) Establish a focal point for handling and coordinating contract audit matters and distributing related information regarding activities of the contractor's overall complex . . . New coordination arrangements will be installed first with nation's 100 largest DOD supplier contractors who are multi-divisional in nature. As above stated, Northrop Corporation is one of the first in Southern California where the program is being implemented.

RESEARCH AND DEVELOPMENT PROGRAMS —The most pressing research and development programs are not in the field of development—but in research—in finding the new materials which can make creation of advanced military devices possible.

—OCI US Army

RIDES WANTED

7 a.m. — 3:45 p.m.

HAWTHORNE BLVD. & TORRANCE BLVD., Torrance. Carol Ann Greminaer, ext. 1453. 2

OLYMPIC BLVD. & CENTINELA, Santa Monica. T. Spence, ext. 1997, EX 4-3642. 2

7:30 a.m. — 4:15 p.m.

PICO & 4TH, Santa Monica. Harlan P. Rutter. EX 2-2628. 3

8 a.m. — 4:45 p.m.

INGLEWOOD AVE. & MANHATTAN BEACH BLVD., Lawndale. Glenneth Leeches, ext. 1372, OS 6-0900. 5

MANCHESTER & SEPULVEDA, Los Angeles. Larissa Domnikov, ext. 1401, OR 0-0886. 5

CONDON AVE. & 148TH ST., Lawndale. P. W. Maaaard, ext. 2013, OS 6-3090.

HARBOR BLVD. & SANTA ANA FRWY., Santa Ana. Wayne Curtice, ext. 1575, KI 5-0130. 5

RIDES OFFERED

7 a.m. — 3:45 p.m.

BELLFLOWER & CARSON, Lakewood. Dean Wherry. HA 5-8833. 12

OLYMPIC BLVD. & CENTINELA, Santa Monica. T. Spence. ext. 1997. EX 4-3642. 12

7:30 a.m. — 4:15 p.m.

PICO & 4TH, Santa Monica. Harlan P. Rutter. EX 2-2628. 13

8 a.m. — 4:45 p.m.

HARBOR BLVD. & SANTA ANA FRWY., Santa Ana. Wayne Curtice, ext. 1575. KI 5-0130 15

CRENSHAW BLVD. & 82ND ST., Inglewood. Charlotte Woolums, ext. 2151, PL 3-7484. 15

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

RUG, 7'x8', wool w/pad, brown tone figured, $12. FR 4-5286. A

ACREAGE, in Joshua Tree, $340 acre. OR 2-9008. A

PLYMOUTH, 1953, sedan, newly overhauled, good trans. $275. PL 3-7484. A

SWING SET, w/glider, $10.; soft water heater, $20. DA 4-6203. A

RANCH, 2½ acres, 1100 sq. ft. house, fruit & shade trees, in Lancaster, $1500 dn. payt., $11,500. EX 1-1121. A

IRONER, Speed Queen, elec., $39.95; training bicycle, $8; TV sets, 2, 16", console, $59.95; table set, $35; tape recorder, Wollensak T-1500, $90. DA 3-6717. A

WASHER, Kenmore, auto., w/variable temp. & levels, 6-yr.-old, $25. DA 3-6050. A

TYPEWRITER, Royal Quiet Delux, portable, $60; dinette set, maple, 5-pc., $50; cocktail table, Formica white top, 35" in dia., $15. GA 4-3795. A

ROLL-AWAY BED, Simmons, w/innerspring mattress, $10; auto air cooler, 12V, $10. TE 3-7621. A

HOLLYWOOD BED, blonde, w/headboard, box spring & mattress, $20. DA 3-5497. A

STEREO TURNTABLE, auto. 4-spd., $35. HO 3-5496. A

DINING TABLE, antique round, hvy. mahogany, $100. OR 8-5934. A

BOAT, 16' Chris Craft, Fiberglas past waterline, sleeps 2, 25 hp Johnson, trailer, $800. EA 2-4028. A

TROPICAL FISH TANKS, 1 15 gal. & 1 5 gal. w/reflectors & filters, $15. OS 6-6390. A

WASHER, automatic, Maytag, no installation in floor, $40. OS 6-7586. A

RUG, Berven Mills early Calif. broadloom, 9'x15'6", rev., multicolored, wool, w/pad $40. PL 5-8417. A

CHEVROLET, 1949, Cadillac powered, w/Hydramatic, $600. OR 7-8775. A

TENT, umbrella-type, cost $68; $40. PL 2-7788. 10 a.m.-2:30 p.m. A

BSA MOTORCYCLE, single, 1954 w/ 1957 eng., high intake cam, 100 overbore, new parts, chrome, $295. FR 4-7416. A

SOFA SLEEPER, brown, Salem maple. $35. DA 7-9084. A

FORD FAIRLANE, 1956, 4-dr., air conditioner, r/h, T-Bird eng., new battery, $600. OS 9-6581. A

NRC Spring Keg Scores Posted

Results of the NRC 1961 annual spring bowling tournament:

Men's team, first place, Walter Watson, Steve Stein, Dick Elstran, Vince Zegenbein, Boyd Gautreaux.

Mixed team, first place, Bill and Connie Knoblaugh, Corinne Davis, Lennie Muellich, and Elmer Lohry.

Mixed doubles, first place Corinne Davis and Earl Saunders.

Men's doubles A, first place, Paris Lane and Ron Metro.

Men's doubles B, first place, Wayne Saunders and Earl Saunders.

Husband and wife doubles, Merle and Paris Lane.

Men's singles A, John Hardman.

Men's singles B, Zaven Atamain.

Women's singles, Ruby Hanson.

Men's all events, class A, Bruce Fleming; class B, Earl Saunders.

Women's all events, Dot Fleming.

High game winners:

Men A, Bruce Fleming, 243; men B, Earl Saunders, 234; women, Connie Moller, 215.

High series winners were:

Men A, Dick Elstran, 681; men B, Jack Craig, 614; women, Dot Fleming, 592.

It's Sign Up Time
July 24—August 11
AID AND NOR-AID
See Your Organization Clerk

FOR SALE

CHEVROLET 6, 1955, stick-shift. $550. FR 6-5733. A

NASH, 1953, 4-dr., w/1957 eng., $300. DA 7-9338. A

PIANO, Baldwin Studio, $375. OR 0-2478. A

FREEZER, GE upright, 13.5 cu. ft. cap., (400 lbs.), $150. TE 3-3944. A

MOTORCYCLE, 1958 Indian, 700 cc twin, $450. TE 5-5453. A

CABIN CRUISER, 18', tuck & roll uphol. w/bait tank & trailer, 50 hp Johnson eng., $1750. DA 4-3919. A

KITTENS, Siamese, 10-wk-old, pediaree, $25 w/papers, $20 w/o. OS 5-1842. A

RADIO TRANSMITTING EQUIPMENT, over 500 lbs., 500W-1.5 KW, $50. FA 8-2878. A

BOAT, ski & drag type, 300 hp blown V8, new steel trailer, $2500. FR 8-3990.

FISHING EQUIP., casting reel, super Zebco, can be used for spinning, $10; spinning reel, Johnson closed face-type, $7; casting rod, copper bail-type, $5 or all 3, $20. PL 6-0015. A

WANTED TO BUY

LEROY LETTERING SET, prefer full set, or 8, 10, & 12 pt. templates, bug & pens. FR 9-8029. B

HEDGE CLIPPER, elec. OR 8-9865. B

BED, single, roll-away-type, OS 9-3884.

HOUSE, 2-3 bdrm. patio or pool, garage, lease/w option to buy. OR 7-3122. B

FREE (to be given away)

PUPPIES, 4 wks. old. DA 4-8789. D

RENTALS OFFERED

SUMMER RENTAL, furn., 2-bdrm., 2 blocks to beach, $100 wk. FR 4-8757. E

HOUSE, 2-bdrm., $95. mo. FR 6-5733.

HOUSE, 3-bdrm., 2-bath, $140. mo. FA 1-1017. E

APT., 1 bdrm., unfurn, parking off street, children o.k., $65 mo. FA 8-8179. E

PERSONALS

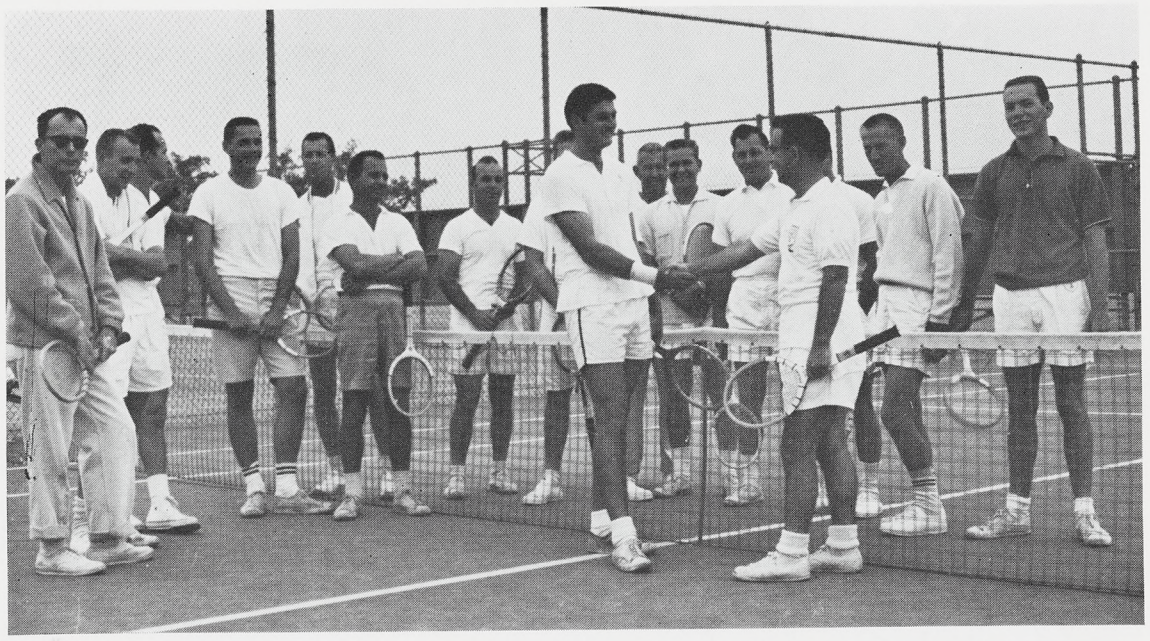
DRIVING to Michigan, leave July 28, room for 1 or 2. OS 5-6206. I

FOR SALE OR TRADE

CAMPER BOX TRAILER w/chuck wagon, fully equipped, w/canvas lean-to, $275 or trade for Hi-Fi set. FR 5-5667. M

NRC Vignette #12

NRC Tennis Club



THE NRC TENNIS CLUB—The mandolin didn't come back but tennis certainly has. People have discovered that tennis is a fine exercise, can be competitively gratifying, is inexpensive and participated in by people who "live next door." The NRC Tennis Club was activated three years ago and since that time has sustained a regularly scheduled program. The Club is considered threefold—industrial league play, intra-company competition and professional instruction. Instructor is Norcrafter Bill Lurie, men's national senior hardcourt champion. Recently, due to plant enthusiasm, Bill has been joined by another instructor. Instruction is held at El Camino College every Saturday, 10 a.m. Industrial league includes such companies as Rand (recently defeated by Norair) STL, Servomechanisms, Douglas, and AiResearch. Photo shows Norair team far side of the net during recent match with STL. Norcrafters are from left, Dick Bartholomew, Dick Carter, Joe Quint, Joe Kline, Art Walker, Russ Black, Nortronics commissioner (shaking hands with John Zancanro, STL captain), Don Rainville, Woody Fletcher, and Jim Scolen. John Potts, Norair commissioner, not in photo, emphasizes that you don't have to be a past champion to participate in the Tennis Club. In fact, it is okay if you never held a racket. "Instruction is to teach those that don't know how, to play; and those who know how to play, to play better," says John. All Norcrafters who wish to play tennis should call Personnel Activities, Extension 2784, for particulars. Pancho Gonzales, move over!

Roaring '20s Bowling Ball All Set

"Should be a gas," say NRC officials.

They are speaking of the upcoming Roaring '20s Bowling Ball which will take place at the Clubhouse, Saturday, July 22.

"It will be a gala affair," they continue. "It is the first such party of what we hope will be a long line of bowling parties in the future. Everybody is invited."

Facts on the Roaring '20s Bowling Ball:

It is sponsored by the Northrop Recreation Club.

Making with swing music will be Leon Guide and his foursome.

Dress is optional. "Roaring '20s" or casual. The couple who best capture the "Roaring '20s" theme will be awarded a fine prize.

Two bowling balls, contributed by Del Mar Lanes, will be raffled. A one-cent ticket buys a chance. Profits, if any, go to the Bowling Club.

Four men and four women special trophies will be awarded to outstanding bowlers of the NRC year.

Sandwiches are included in the price of admission which is $1.50 a person. Keg beer will be on hand and free, courtesy of the NRC.

Tickets now available from bowling commissioners, league secretaries or from Personnel Activities offices.

Dancing starts at 9 and continues until 1 a.m.

YIPPEE HI YO

The NRC Riding Club, Tex Statley, commissioner, announces an evening ride Sunday, July 16, from Circle Bar Riding Stables Location is 5543 Imperial Highway, South Gate.

The time of the ride is from 6 to 9 p.m.

Bring your families, says Tex and enjoy a good time outdoors in the cool of the evening.

NRC Good Time Table for July

For enrollment or information on activities listed below, call or contact Personnel Activities, Plant One, extension 2784. All clubs meet at the NRC Clubhouse unless otherwise noted.

ART CLUB, Stewart Luce
Meets Thursdays, 7-10 p.m., Joe Kalina's Studio, 3234 W. 157th St., Gardena.

BALLROOM DANCE CLASS, Wes Williams
Thursdays, 7-10 p.m. Newcomers welcome. Cost $10 each.

BIBLE STUDY, C. J. McGuire
Plant I—Daily, 11:30-12:15, Tool Design Bldg., 11-11:45, 5566 Conf. Room.
Plant II—Mondays & Thursdays, 12-12:45, Conf. Room 2.
Eng. Center—Daily 12-12:45, Reliability Conf. Room.

BOAT CLUB, Sandy Friedfeld

BOWLING (days), Earl Saunders
Summer leagues rolling.

BOWLING (nights)
Summer leagues rolling.

BOY SCOUTS
Sea Scouts meet Tuesdays, 7:30 p.m.
Cub Scouts meet 4th Friday, 7:30 p.m.
Boy Scouts meet Thursdays, 7:30 p.m.

CAMERA CLUB (days), Howard Butler
Meet 1st & 3rd Wednesdays, 7:30 p.m.

CAMPING CLUB, Fred Armstrong
Meet 1st Wednesday, 7:30 p.m.

FISHING CLUB, Harold Rapella
Charter boat, "New Longfin," July 22, $12. Also "Forerunner," July 29, $10.

GEM & MINERAL CLUB (days)
Bill Puniwai
Meets 2nd Wednesday, 8 p.m.

GEM & MINERAL (nights), Doyle Shook
Meeting place varies.
Meet 1st Wednesday, 1 p.m.

GOLF, John Banerian
Ojai, July 16. 7 a.m. Cost: $5.50. Entries open July 5. Limit: 100 golfers.

MIXED CHORUS, Ron Henderson
Meets Tuesdays, 7:30 p.m.

MODEL RAILROAD, Jack Wilson
Meet in Annex, Thursdays, 7-10 p.m. Visitors welcome.

RADIO CLUB, Paul Serafin
Meet last Thursday, 7:30 p.m. Radio code class meets Tuesdays, Wednesdays, Thursdays, 7:30 p.m. NRC's station is W6VPZ.

RIDING CLUB, Tex Statley
Trail ride & snacks, July 16, 6-9 p.m. at Circle Bar Stables. Meeting July 30 at C. Wheeler's, 1743 W. 127th.

SKEET CLUB, Bob Bagby
Shoots alterating Saturdays at Rancho Angelus Range, Main & Broadway, 10 a.m. July 15, 29.

SKINDIVING, Ralph Gonzales
Meet 3rd Tuesday, 7:30 p.m.

SOFTBALL, Mac McConnell
League play, Lennox Park, Wednesdays. New players welcome.

SPORTS CAR CLUB, Lou Perry
Meet 2nd Thursday, 7:30 p.m.

SQUARE DANCING, Dick Rinehart
Fridays, 8-11 p.m., Ralph Hill's Hall, 15701 S. Crenshaw.

SURF FISHING, John Pawlicki
Meets July 11, 7:30 p.m. Special movie.

SWIMMING
Leuzinger High School every Tuesday, Wednesday, Thursday, 4:45-6:45 p.m. Opens June 27, closes August 24.

TENNIS, John Potts
Free instruction Saturdays, July 15, 22, 29, 10 a.m., at El Camino Jr. College.

TOASTMASTERS 212 (days)
Meet at Cockatoo Inn Thursdays, 6.30 p.m.

TOASTMASTERS 1398 (nights), Jay Rayner
Meet at Western Ave. Country Club Thursdays, 12:15 p.m

TRAVEL CLUB, Howard Cornelius
Next meeting July 20, 7:30 p.m. Upcoming European trip.

FOR THE LADIES

BOWLING (nights)
Summer leagues rolling.

BOWLING (days), Corinne Davis
Summer leagues rolling.

GIRL SCOUTS
Mariners, Tuesday, 7 p.m., Naval Reserve Center, 201 W. 126th St., Hawthorne, ages 13-18. All Norcrafter girls welcome.

KNITTING, Vera de Villiers
Meets Thursday, 7:30 p.m. Free instruction each meeting.

PUBLIC SERVICE AWARD

CALIFORNIA STATE FAIR AND EXPOSITION

Northrop-Norair News

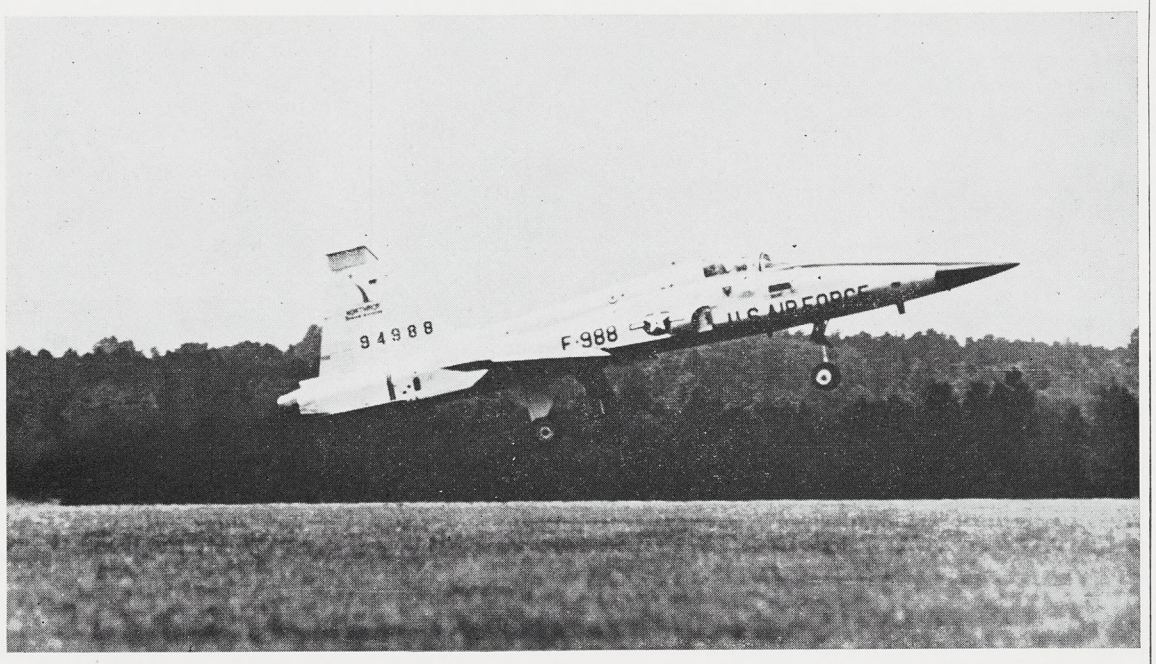
Issued biweekly by Norair Division of Northrop Corporation • Wednesday, July 19, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

N-156 And Limited War Suitability

ONE--!

TWO--!



THREE--!

NO AIRSTRIP—Norair's N-156 limited war fighter shows its ability to operate from a sod field in sequence of photos, taken during recent limited war capability demonstrations at Pensacola, Fla. Carrying full internal fuel load of 3800 pounds plus a simulated military payload, the N-156 required only 2500 feet of takeoff roll on the bumpy sod. The N-156 operated from sod fields for three days of trials, always within a 3000-foot limit.

AID, NOR-AID "SIGN UP TIME"

GOAL IS 12 MINUTES A WEEK

Yearly "sign up time" for Aid and Nor-Aid starts next Monday, July 24.

Norcrafters are advised that specific charity designations which are good for one year only, expire during this period unless renewed. Also "'sign up time" week, actually two weeks, gives all Norcrafters an opportunity to participate in Aid and Nor-Aid, if they are not already doing so.

The drive will officially start with indoctrination of organization clerks. All necessary payroll deduction forms will be made available at that time.

Aid United Givers has been in operation in Southern California for over 10 years. Its low operating cost has set records throughout the nation for charitable undertakings. Aid costs for administration, advertising, collections, and distribution amount to only 4.1 per cent of the charity dollar.

Norcrafters have their choice of designated or undesignated contribution methods.

If contributions are undesignated, they are shared equitably between the 12 charities under the Aid and Nor-Aid banner. The 12 charities consist of American Cancer Society, American Red Cross, Arthritis and Rheumatism, City of Hope, Community Chest, Crippled Children's Society, Heart Association, Hospital Charity Fund, John Tracy Clinic, Multiple Sclerosis, United Cerebral Palsy Association (Los

(Continued on Page 4)

Colonel Keeling, WCMR Made Brigadier General

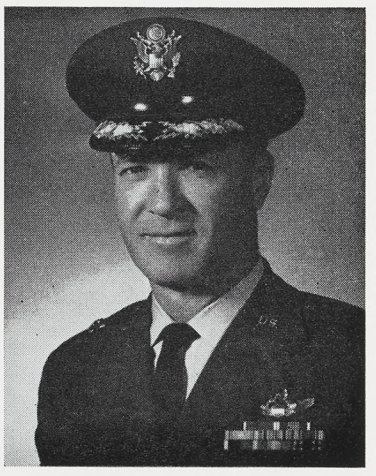
Colonel Gerald F. Keeling, commander, Headquarters Western Contract Management Region, AFSC, has been promoted to brigadier general, it has been announced.

The promotion was effective July 1, 1961.

General Keeling, has been commander of WCMR since June 1960.

Norcrafters will remember close association with him during 1949, first year of production on the F-89 Scorpion. General Keeling was at that time chief, F-89 Project Office, Wright-Patterson Air Force Base.

His most recent and chief assignments have been deputy director for Procurement and Production Engineering, DSC/M, Directorate of Procurement Production and Engineering, 1953-55; executive, DCS, Materiel, 1955-57; and deputy assistant for Production, 1957-58, all at Head-



GENERAL KEELING

quarters USAF. He was AFPR, Headquarters SMAMA, North American Aviation, 1958-60.

NEWS BRIEFS

T-38 HAS RANGE TO RANDOLPH — Frank Mathes, chief, Field Support group, reports that Air Force team headed by Lt. Colonel Art Buck, Category III Test Force director, took delivery on three Talon aircraft at Palmdale, flew nonstop 1050 miles to Randolph. Made military climb out of Palmdale to 38,000, held 38,000 to Phoenix, then cruise climbed to 42,000 feet which they maintained until Randolph approach. Headwinds, 15 to 30 knots were encountered during portions of the trip.

T-38 AT ANDREWS—The T-38 demonstration program at Andrews Air Force Base has now been completed, it is reported by W. W. Millikan, Norair senior Washington representative. The Norair trainer, during its five weeks stay at the nation's capital, became an increasingly familiar sight in the busy Andrews traffic pattern. It accumulated a total of 300 approaches to the field and on three occasions was prominently displayed when President Kennedy was at the base. . . . Key representatives of the Army, Navy, Air Force, Department of Defense and other government officials who flew were

(Continued on Page 2)

Service is M-C Mission States Prexy Ed Nolan

Space Night. Civic Government Night. Air Force Night. Corporation Night.

A dinner dance at the Biltmore Bowl, plus educational forums and field trips.

This is the program in store for Northrop Management Club members this coming year, states new President Ed Nolan.

ED NOLAN

"Our dedicated purpose is to please the greatest number," stated Mr. Nolan. "By establishing more service to members as our mission, we can expect to grow in membership and meeting attendance. At the end of the year, we feel that the club will once again have set records as being the finest and most fruitful organization of its kind in industry.

"We call our program 'Operation Participation'. This is because we feel that more members have an opportunity to take active and specific parts in club affairs than ever before," he concluded.

Payment of Management Club dues, plus all dinner tickets for the year, has recently been arranged for by payroll deduction. An 18 per cent increase in membership immediately resulted. Only one out of ten members now pay direct.

NEWS BRIEFS

(Continued from Page 1)

unreservedly enthusiastic about Northrop's accomplishment. . . . Each flight included: Afterburner climb to 40,000 feet; cruise to the "boom area" on the Atlantic Coast (120 nautical miles from Andrews); accelerate to 1.2; supersonic roll and turns; acrobatics back to the test area; stalls; single engine performance; low flying; touch and go landings (usually three each flight); full stop landing; walk around and critique. . . . Normally a schedule of four flights a day was maintained. In one instance, six flights were accomplished. Although a number of flights were made under instrument conditions, weather did not curtail mission. Temperature varied from cool to pleasant to very hot and humid. One week of active thunderstorms changed flight profiles but did not interfere. . . . Support by General Electric was excellent, their representatives being capable, congenial, and most cooperative. . . . The engines received real workouts on each flight. The left engine was shut down and relighted on 68 flights, a most impressive performance. . . . Norcrafters aiding Mr. Millikan on the program included Ben Paganini, tech rep; Mike Corba, chief, USAF T-38 Projects, Marketing; the T-38 maintenance team Denny Wilson, crew chief; Bob Grafton, inspector; Ray Zeller and Norm Edic, mechanics; and Reuben Oian, electrician. . . . Stated Mr. Millikan, "The design, performance and reliability of the T-38 have been well demonstrated. The opportunity to actually fly the Talon with leaders of our government was most rewarding."

Northrop Blood Bank

Give

Thursday, August 17

RAPID CITY BUILD UP — Test engineers and technicians are needed at Rapid City in support of the activation of the T-2 Titan squadron at Ellsworth AFB, it is announced by Jim Matthews, manager, Site Activation department. Thirteen test engineers with system experience in either electrical or electronic fields are presently needed. In addition, 30 technicians are needed in each of three fields, electrical, electronic, and mechanical. Work will be with hardware in tunnel and silo areas in performance of system verification. Assignment to the T-2 site would be for approximately a year. Norair is seeking these skills in all areas of the midwestern and western United States. Information locally may be obtained by calling Bob Willson, employment supervisor, Personnel, extension 2412.

Smash! Bang! Boom!

IT'S HERE—THE ROARING 20's

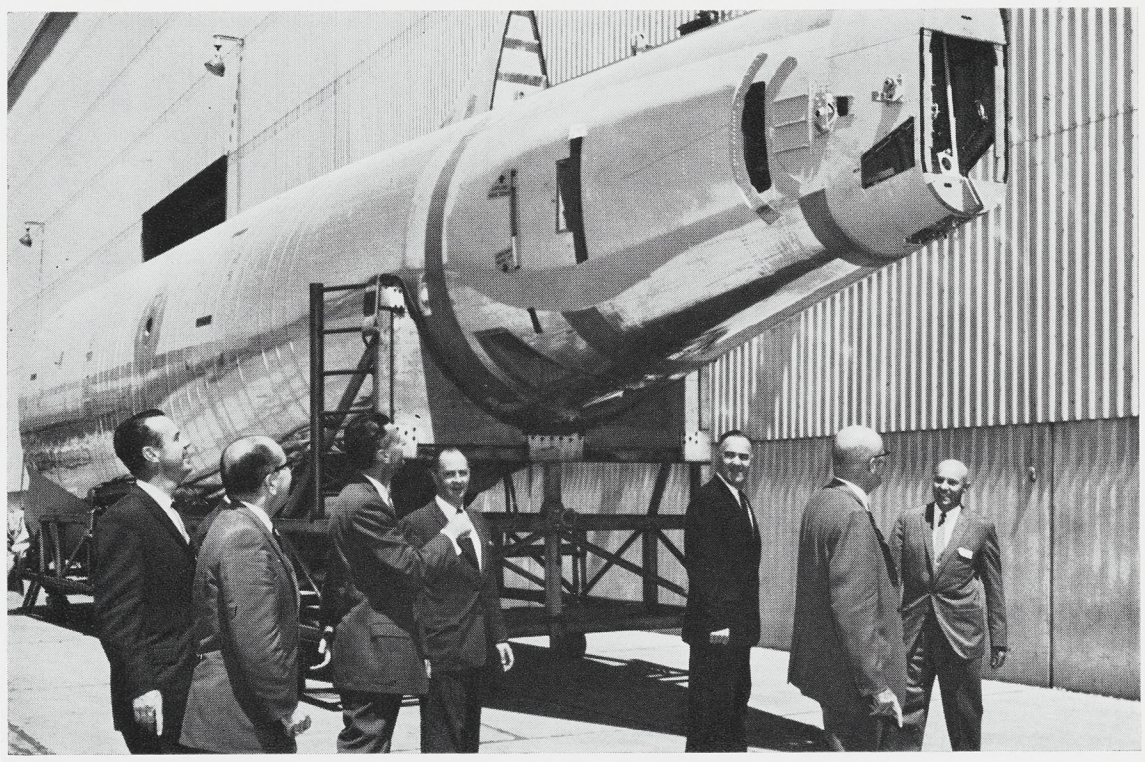
"Bowling Ball" Dance

SATURDAY—NRC CLUBHOUSE

JULY 22

Tickets at PA or at the Dance

For The Best Possible Product



AT BOEING—Boeing and Norair coordination meeting on KC-135 and 707 quality and manufacturing was held at Boeing's Transport Division, Renton, Washington. Photo shows portions of group on assembly line tour. Studying Norair-built aft fuselage as it is mated to the center fuselage of the big jet are from left, Warren Sparks, Norair coordinator and representative at Boeing; Dan O'Halloran, chief, Norair Quality Control; Cliff Sylliasen, manager, Boeing Quality Control; Richard Holdsworth, Boeing Quality Control supervisor; Sidney Stoltz, Boeing Quality Control superintendent; George West, Norair superintendent, Manufacturing; and Victor Harkoff, Boeing buyer.

Post-brazing Brazing On B-70 Solved

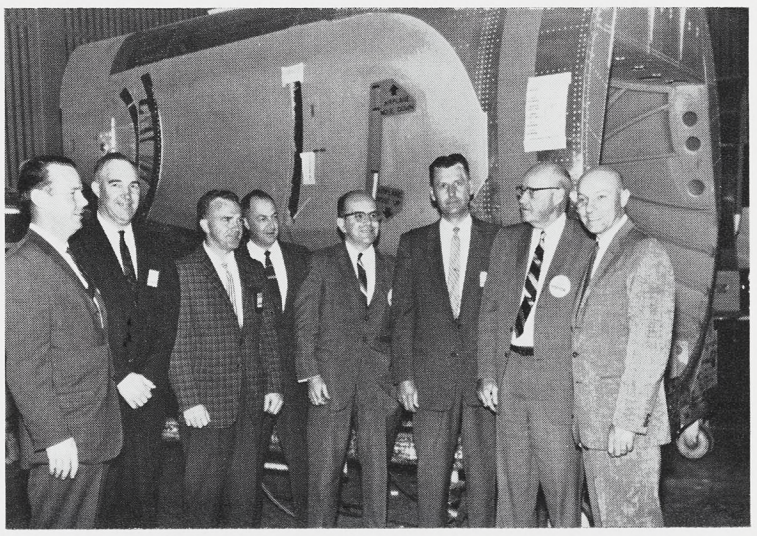
Post-brazing brazing—a Manufacturing R&D what is it?

Post-brazing brazing is the capability of brazing attachments to stainless steel honeycomb panels which have already been brazed without disturbing the previous brazing, or the heat treat conditions of the panel.

North American Aviation B-70 panels on the Norair contract require that discs, buttons, and short angles be post brazed on brazed stainless steel honeycomb panels. Also, that stainless steel spool-shaped parts be brazed into a hole through the panel.

As a solution to this advanced assignment, Manufacturing R&D devised and has applied for patents on two devices called "controlled resistance heating devices." One looks like a massive soldering gun with a tungsten heating element, including a thermocouple for feedback temperature control up to 1800 degrees, for brazing corner fillets. The other is a wide inconel band narrowed at the point where it touches the brazement, and again, thermocouple controlled at the narrow point at which all the heat is generated.

Both devices are operated from the typical Nortobraze preprogrammed temperature control controllers.



JET TRANSPORT EQUIPMENT AT ITS FINEST—Coordination meeting group stops for photo at Norair-built 707 KC-135 aft section. From left, Warren Sparks, Sidney Stoltz, C. F. Hill, Boeing Quality Control chief, Messrs. Holdsworth, O'Halloran, Sylliasen, West, and Harkoff. Meeting is part of constant program of assuring Boeing's airline and military customers the very tops in workmanship and reliability at lowest possible product cost.

NORCRAFTER ON PLASTIC TOOLS AT PURDUE

Norcrafter A. M. Guerreiro, research engineer, Manufacturing Research and Development, spoke before the third annual seminar on Plastics for Tooling held recently at the Memorial Center, Purdue University, Lafayette, Indiana.

Title of Mr. Guerreiro's address was "High Temperature Epoxy Tools."

General White Retires, T-38s In Salute Fly-by

General Thomas D. White, retiring chief of Staff, USAF, learned to fly in 1924 in open cockpit, fabric-covered biplanes. Rate of climb for trainers of that day was about 500 feet a minute.

During farewell ceremonies in Washington, D.C., as he turned his high office over to General Curtis E. LeMay, General White was saluted by formation flights of the very newest in space age trainers, Norair's T-38 Talon supersonic speedsters. The Talon can climb at the rate of 35,000 feet a minute.

Such progress in a single lifetime career stood to serve as a symbol of satisfaction to a man so dedicated to the military welfare of his country. And Norcrafters who build the Talon can take like pride in their accomplishment.

The T-38s participating in the event were flown to Washington from the Air Training Command in Texas.

General White later stated to the nation that our national survival is going to depend on how well we continue to exploit our role in space; that there is "no question" about American air superiority, the deterrent power of the Strategic Air Command and our ability to survive a surprise attack.

After the mighty display of American air power thundered by in review and as the General set aside his 41-year tour of duty, an Air Force reporter, writing in AFNS, noted, "General White's farewell has its melancholy moments. There was hardly a dry eye."

Northrop-Norair News

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NORAIR DIVISION

CHARLES BRADFORD, Editor

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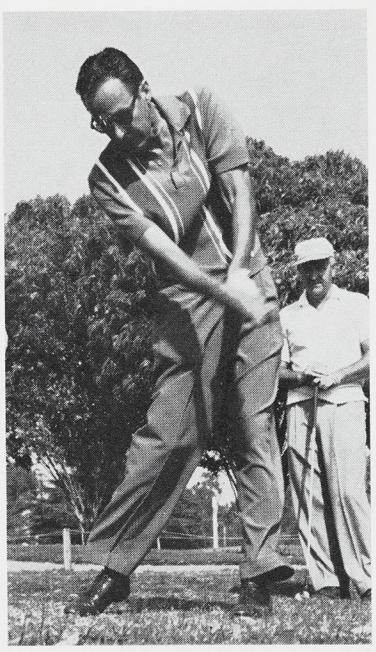
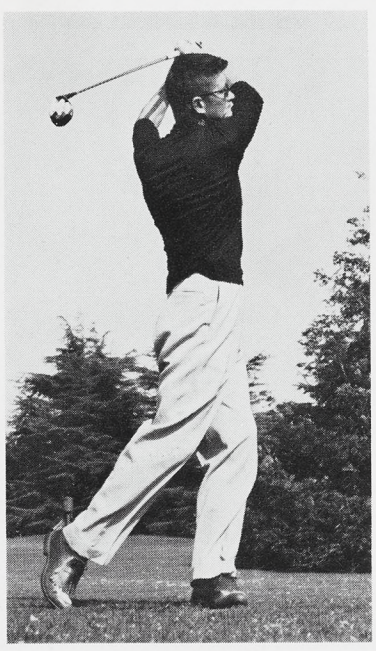
Twilight Golf---An NRC Answer To Recreation Growth

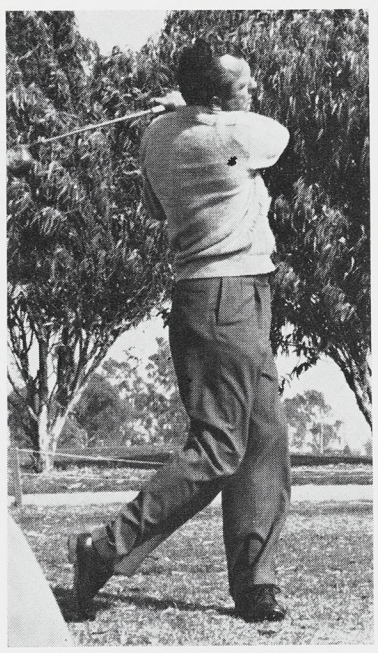
GEORGE DOUGLAS



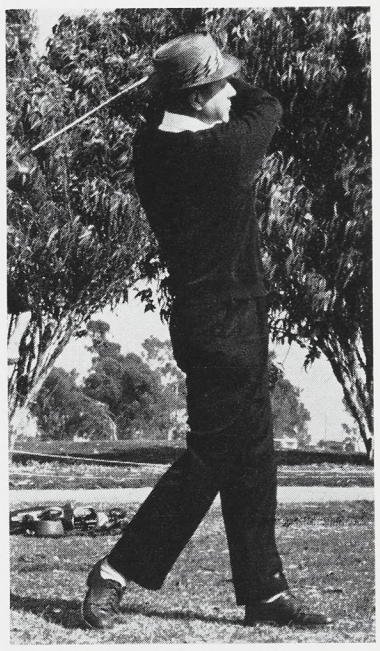
MILT KUSKA



MIKE CRAIG



PAUL WIERK



KEN CLAYTON

TWILIGHT GOLF—Golf, as with many other forms of recreation, has been set upon by difficult times in these recent pushbutton years. Where to play, when to play, the business of keeping a foursome active, starting times, are some of the vexing problems that confront the man who dearly loves to tramp the long fairways once or twice a week. The answer at Norair is NRC's twilight leagues. During the summer months, a man can go out and get in 9 holes before the sun goes down and at special rates. Also he can play with friends and fellow workers. The twilight league man getting in his stint during weekdays also forestalls another of the golfer's knotty barriers—that of making the missus a golf widow on weekends . . . In series above, Norair golfers are photoed as they tee-off at Western. Note rapt expressions, deep concentration. The scores they shoot this summer might bring home a trophy for the mantelpiece this fall . . . The season is well under way. Twilight play is something you have to make early applications for. Vacancies occur only if someone falls out. As of presstime, 280 Norcrafters, making 70 foursomes divided into 14 leagues make up the young army of Norair twilight golfers.

Is It An Emergency--? Dial Extension 2211

If it is an emergency, call extension 2211.

Norair Plant Security calls attention to the importance of calling the correct number when reporting accidents, severe illnesses while at work, fires, police matters.

When a Norcrafter dials 2211 to report an emergency, he starts an immediate chain reaction of carefully planned events.

If any other number is called, delays are inevitable. Such delays could cause a building to burn, or a failure of police action.

Each telephone in the plant is plainly labeled with the emergency number—2211.

Calling extension 2211 in reporting emergencies immediately opens a "conference line" of key agencies including the plant hospital, guard headquarters, fire office, the Safety Engineer's office, and Maintenance.

The people on the conference line are trained in all manner of emergencies.

They will know exactly what to do and how to get it done with the greatest speed.

The right call may save a life.

The wrong call could cost a life.

ART SHOW WINNERS—Norcrafters whose paintings were judged the best on display by the art jury at the recent 14th Annual Art Awards Exhibit. From left, Norair professionals Hank Shinn, "Mechanical Graveyard", third place, $25; Joel Porter, "France #8", second award, $50; and Anaheim's Warner Baird, "Seated Figure in White", first prize, $75. Norair amateurs Cathy McKenzie, (daughter of Stewart McKenzie), "Still Life", first prize, $75 and T. A. Robinson, "Cabin in the Woods", second prize, $50. Not in photo, Roy Gregory, "Maine Sun", third prize, $25.

Marlin at La Paz

EL GRANDIOSO PESCADOR—Eddy Aguilar, Norair Office Machine Repair, repaired to La Paz over the July 4 holiday and caught himself a 176 pound marlin which fish bids fair to taking first or at least second in the 8th Torneo Internacional de Pesca Deportiva. Eddy hooked his marlin from the Raparco II, Captain Mario. He was 40 minutes in bringing marlin to gaff, medium tackle.

Buy Savings Bonds

Radioplane Starts New Facility

Ventura County officials and civic leaders joined last week with Northrop Corporation President Thomas V. Jones, M. W. Tuttle, vice-president and general manager, Radioplane Division and other Northrop officers in informal ground breaking ceremonies for the new Radioplane Conejo Valley facility. The event signalled commencement of the multimillion dollar building project.

Representing part of Northrop's three-year $32,000,000 capital investment program, the new facility will be located in campus-like surroundings at Rancho Conejo, as a portion of the 10,000-acre planned development of the Janss Corporation. The Radioplane research and manufacturing center will provide the most modern accommodations for all Radioplane research, engineering, manufacturing and administrative activities presently located at Van Nuys.

SWEEPSTAKES WINNER—Anaheim's Gerri Christie was voted sweepstakes winner by Norcrafters who visited the show. She received the large NRC sweepstakes trophy for her "Orange Oil".

Architects are Albert C. Martin and Associates, and the general contractor is William Simpson Construction Company.

Employing approximately 2000 people, Radioplane is the leading producer of complete target and surveillance drone systems for all branches of the U. S. armed services and for several allied foreign governments. Other activities include the landing system for the National Aeronautics and Space Administration's Project Mercury manned spacecraft program.

RIDES WANTED

7 a.m. — 3:45 p.m.

DOTY & 105th, Inglewood. H. B. Contratto. ext. 631, OR 2-5691. 2

7:30 a.m. — 4:15 p.m.

COMPTON BLVD. & VAN NESS, Gardena. Florence Wilkerson, ext. 556, DA 7-0729. 3

8 a.m. — 4:45 p.m.

DENKER & WESTERN, Los Angeles. Frances Jones, ext. 1718, PL 6-3856. 5

SUNSET & SAN DIEGO FRWY., Brentwood. Michael Estes, ext. 412. 5

LA BREA & 64th, Inglewood. C. Alper, ext. 1436, AX 3-7515. 5

SEPULVEDA & MANCHESTER, Los Angeles. Larissa Domnikov, ext. 1401, OR 0-0886. 5

WOODRUFF AVE. & SOUTH ST., Lakewood. J. S. Greenough, ext. 1401, TO 6-5703. 5

RIDES OFFERED

8 a.m. — 4:45 p.m.

WOODRUFF AVE., & SOUTH ST., Lakewood. J. S. Greenough, ext. 1401, TO 6-5703. 15

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

TENT, umbrella-type, 9x12, netting, floor, hvy. duck, $18. PL 5-9075. A

RUNABOUT, 15', trailer, 35 hp Evinrude, 3 life jackets, compass, cruise tank, 6-gal., 5 gas cans (Army), $600. OS 6-6360. A

MGA, 1957, black, w/w, new carpeting, 7000 miles on eng., $1215. OR 4-6328.

FISHING EQUIPMENT, Super Zebco casting reel, can be used for spinning, $10; spinning reel, Johnson, $7; casting rod, copper bait, $5 or all 3, $20. PL 6-0015. A

PIANO, upright, $110. DA 7-9084. A

VENETIAN BLINDS, aluminum, 2 sets, 34¼"x48¾", white, cost $20, $10; fireset, solid brass, $6. FR 9-5690. A

MOTOR, Briggs & Stratton, 2 hp, recoil starter, $20. PL 5-4497. A

BED, dbl.-size, birch, Haywood-Wakefield, $45; other bdrm. set pcs. available; aquariums, 2, 7½-gal., w/hoods & matching wooden stands, $7 ea. set. FR 8-3266. A

CEDAR CHEST, Lane, mahogany, $25. OR 7-1286. A

CHEVROLET, Bel-Aire Deluxe, 1957, convert., 25,000 miles, auto. trans., pwr. steer., r/h, w/w, $1475. GR 8-5325. A

DINETTE SET, 6-pc., brown-walnut Formica table top. $40. OR 2-5783. A

CADILLAC, Coupe De Ville, 1952, p/steer., r/h, $195. EX 4-6944. A

SOFA, 200-yr.-old, hand-carved, antique, w/chairs, compl. restored, $750. SY 8-2622. A

ACCORDION, 120 base, $80; trumpet, $15. OS 6-8331. A

PUPS, 4 males, 3 females, toy shepherd, wire-haired, Airedale, med. size, $3. FR 4-9997. A

BOAT TRAILER, axle, springs, wheels, tires, $35; Foldarola, $5. FR 9-1397. A

FORD, 1952, 4-dr., r/h, $150. FA 8-2800.

POODLES, AKC reg., silver, toy-type, 2 females, 1 male, $125. OS 5-1876.

BABY EQUIPMENT, crib w/mattress, buggy, playpen, hi-chair, stroller, $50. FR 9-5592. A

CHEVROLET, 1951, 2-dr., $65. DA 4-1694.

GUNS, shotgun, 20-gauge, Ithaca, Model 37, $60; Remington Gamemaster, Model 141, 35-Rem. cal., $55. FA 8-8841. A

PICKAXE, $4; sledge hammer, $7; end table lamps, pr., $15. PL 7-2753. A

CAR COOLER, Wright, int.-6 V-type, 525; sewing machine, portable, w/cover, $15. PL 6-9697. A

BASSINETTE, white, w/liner & pad, $6. OR 7-6919. A

BICYCLE, boy's, 26", balloon tires, $14. FA 8-3306. A

HOUSEHOLD FURNISHINGS, washer-dryer comb., 1960, Norge, $150. OR 1-6494. A

ARC WELDER, Lincoln, 250 amp, portable, Model A Ford eng., $350; lathe, small, $65; pickup camper, $25. OS 6-2435. A

NRC Vignette #13

NRC Swimming Club

THE NRC SWIMMING CLUB—Here is one club that finds the summer season to its absolute liking. There is no better way to tone up the system than by a good swim. Each summer the NRC takes exclusive dates at Leuzinger High School pool, where free of charge, Norcrafters and families can enjoy a dip. The photo above shows a typical Tuesday, Wednesday, or Thursday evening at Leuzinger outdoor swim emporium. It is hard to tell the grownups from the kids which goes to show what swimming does for one. Lifeguards are always in attendance. You need your own towel. Women need a bathing cap. That is all there is to it. This spic and span expanse of water is a far cry from the old swimming hole back along the Monongahela, Mississippi, or the Kaw, but it does pretty well in a pinch. Last one in is a rotten egg!

Sign Up

(Continued from Page 1)

Angeles County), and Los Angeles YMCA.

The John Tracy Clinic is the newest member of Aid United Givers. Mrs. Thomas V. Jones, wife of Northrop Corporation president, is assistant secretary and a member of the board of directors of this worthy cause.

Designation means that Norcrafters may designate contributions to specific charities including the 12 that come under Aid, Nor-Aid, and any approved charity within the United States. It is such designations which expire in August of each year and must be renewed.

In six years, the Aid and Nor-Aid charity plan within the Company has contributed over $1,430,132; 1957-58 was high year with $300,735 being contributed. During this six-year period over $281,832 has been used to assist 1224 Norcrafter needy families. Over 5000 persons benefited directly.

How much should Norcrafters contribute to Aid and Nor-Aid? Nor-Aid campaign slogan has always been "12 minutes of your weekly paycheck".

Organization clerks or Personnel Activities, extension 2784, have complete information on Aid and Nor-Aid.

Display Committee Announces Showings for Next Six Weeks

Norair Committee for Cafeteria Displays has announced the schedule of showings in the main dining hall between now and September 2.

This week, until Friday, T-38 and N-156 movies are on exhibit.

The next two weeks, July 24-August 4, there will be Northrop Recreation Club display featuring the Riding Club. Tex Statley is Riding Club commissioner.

August 7 through 18 will see a Laminar Flow Control display.

August 21 through September 2, there will be a display of Nortronics items and products.

The Committee for Cafeteria Displays consists of John B. Clark, director, Norair Industrial Relations; R. W. Rolfe, chief, Marketing; James Thomas, Nortronics Electronic Systems and Equipment; Charles Boyle, supervisor, Personnel Activities; Don Roberge, Corporate Public Relations; and Robert Benbrook, supervisor, Product Display.

Chairmanship rotates from meeting to meeting.

FOR SALE

SAILBOAT, 13', glass molded, Romeo class sloop, 110 sq. ft. sail; car top carrier, compl., $385. OS 6-8663. A

HOUSE, 3-bdrm., $500 dn., 1-yr.-old, in Huntington Beach, $13,000. Box 1701.

ADDING MACHINE, Addo-X, 10 col. total, 11 cap. credit bal., adds, sub., mult. & div., $200. FR 8-6402. A

WASHER-DRYER, comb., 1958, GE, elec., $50. FA 1-1326. A

REFRIGERATOR, 1950, Coldspot, $25. DA 3-7781. A

CLOCK-RADIO, Zenith, $30. OR 7-8775.

HOUSE, 4-bdrm., 2 baths, fenced lot, landscaped, installed sprinklers, compl. elec. kitchen, in Garden Grove, $20,000. LE 9-8816. A

MG, 1952, $550. FR 2-1696. A

SNARE DRUM, cover case, stand & 4 sticks, $40; racing bicycle, boy's, 26", 3-spd., liteweight, English, w/access., $30. DA 9-2076. A

FORD VICTORIA, 1953, recent eng. o'haul, new tires, $225. OS 6-0626. A

HI-FI, Packard Bell console, w/AM & FM radio, blonde cabinet, $70. OS 6-6108.

WANTED TO BUY

TRUNK, steamer-type, or large footlocker. FR 1-5816. B

OUTBOARD, small. FR 8-3317. B

REFRIGERATOR, $50 max. PL 7-5916. B

RENTALS OFFERED

ROOM, lge., pvt. entrance, TV, $12 wk. OR 2-1240. E

HOUSE, 2-bdrm., unfurn., in Hawthorne, $90. OS 6-6956. E

CABIN, near Arrowhead Lake & village, $40 wk. HO 4-4649. E

HOUSE, furn., Thermo-Control heat, cedar closets, TV, lawn maint., adults, no pets, $165. OR 7-8538. E

ROOM, w/garage, for man, walking distance to Plant, ref. req., $50 mo. OS 6-7957. E

CHILD CARE WANTED

CHILD CARE WANTED, in my home, 2 children, 3-5 days a week, ref., $5 day. TE 5-9472. H

CUSTOM MURALS FOR YOUR HOME

Would you like to have original paintings or murals for the walls of your home?

Stewart Luce, NRC Art Club commissioner, announces that Art Club members, primarily professionals, will contract to paint original oils or murals for Norcrafters or other news readers at extremely reasonable cost.

"Exclusive paintings which blend in with the decor of your home are the ultimate in interior decoration," states Stewart. "Furthermore, such paintings or murals become an eternal pleasure."

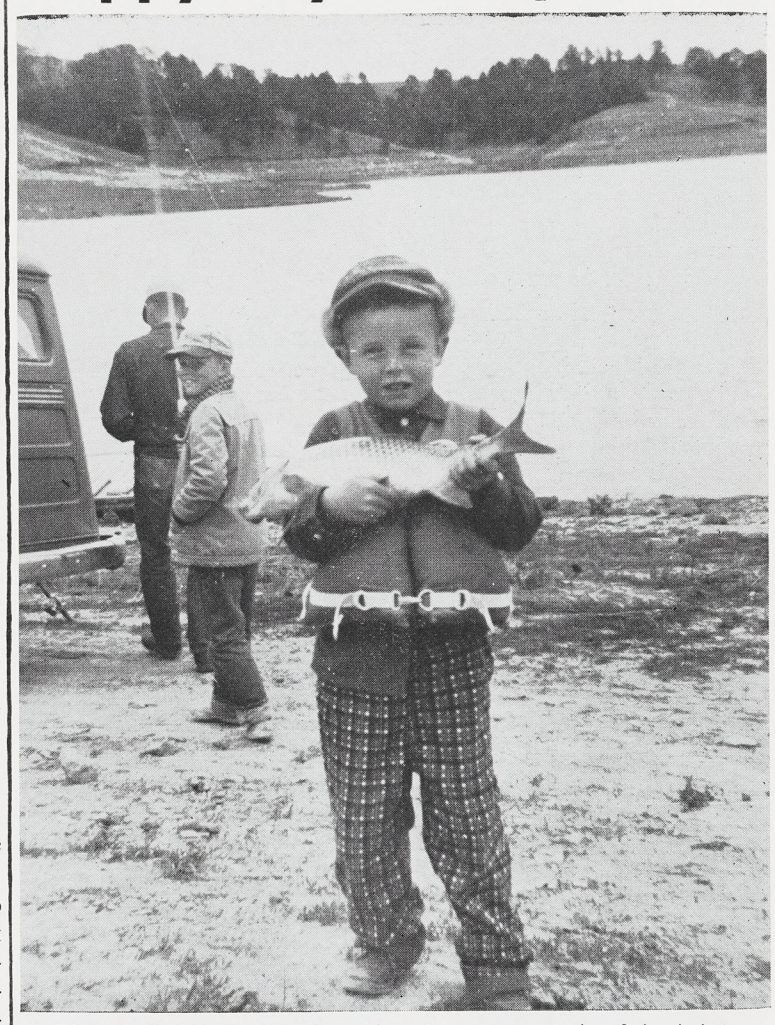
Those interested are asked to call Personnel Activities, extension 2784.

PERSONALS

ORGAN LESSONS, beginners & intermediates, basic music & techniques in class or pvt. lessons, after 6 p.m. & every other Sat. OS 5-1013. L

CONTACT wanted w/party witnessing motorcycle-auto accident at Rosecrans & Aviation, April 12, 7:30 a.m. FR 9-1542. L

Happy Day At Rapid City



THE ONE THAT DIDN'T—This Angostura Lake fish didn't get away from young Greg McDowell, son of Rapid City Norcrafter Bill McDowell, engineering project administrator. Greg's big thrill came during NRC Fishing Club outing when 50 T-2 Norcrafters and families spent the day with rod and reel in quest of finny treasures. Fishing Club is one of the most active at the site, says Virg Maniago, who sent photo to Norair News.

GREEN RIVER LOW GROSS GOES TO BOB MARSH

Results of the Green River golf tournament held on June 24:

Overall low net winners was a tie between Wayne Hall, 81-13-68 and Ken Waters, 90-22-68.

Overall low gross went to Bob Marsh, 77.

First place winners in each flight:

First flight, Virgil Wilson, 81-12-69; second flight, Jim Quick, 82-13-69; third flight, Lawrence Lowe, 91-20-71; fourth flight, Floyd Bruneek, 94-24-70; fifth flight, Bill Gomen, 96-26-70; and sixth flight, Paul Allenbach, 97-27-70.

All first place winners received NRC golf caps. Low net winners received trophies.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, August 2, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

NEWS BRIEFS

SALARIES—Norair salary rates have been revised upward with new structure and benefits to become effective 7 August, it has been announced by Corporate Vice-president and Norair General Manager Dick Nolan. The adjustments, it was emphasized, do not come as a general overall plant salary increase but as an increase in earnings potential . . . The maximum (ceiling) of each salaried rate range has been upped three per cent. Also provisions for pro-rata vacation pay in event of layoff, formerly requiring one full year service, have been modified. After 7 August, salaried personnel with six months continuous service will be eligible for pro-rata vacation benefits . . . Salary increases will be granted deserving personnel within the framework of the established merit review system. Salaried personnel are currently being reviewed and resulting increases will be effective 7 August . . . Stated Mr. Nolan.

(Continued on Page 3)

General Irving L. Branch Commander at Edwards

Brig. General Irving L. "Twig" Branch of Headquarters USAF has been named commander, Air Force Flight Test Center, Edwards AFB, Calif., it has been announced by Gen. Bernard A. Schriever, commander, Air Force Systems Command.

Maj. General Robert H. Warren, previously named to replace Maj. General John W. Carpenter III, was reassigned to Eglin AFB, Fla., to become commander, Air Proving Ground Center, also an AFSC unit.

In Washington General Branch had been assistant chief of Staff Development for Nuclear Systems and chief of the Aircraft Nuclear Propulsion office, a joint Department of Defense and Atomic Energy Commission office. He was also the assistant director, Division of Reactor Development of the Atomic Energy Commission.

GENERAL BRANCH

BLOODMOBILE TO VISIT NORAIR AND NORTRONICS, THURSDAY, AUGUST 17

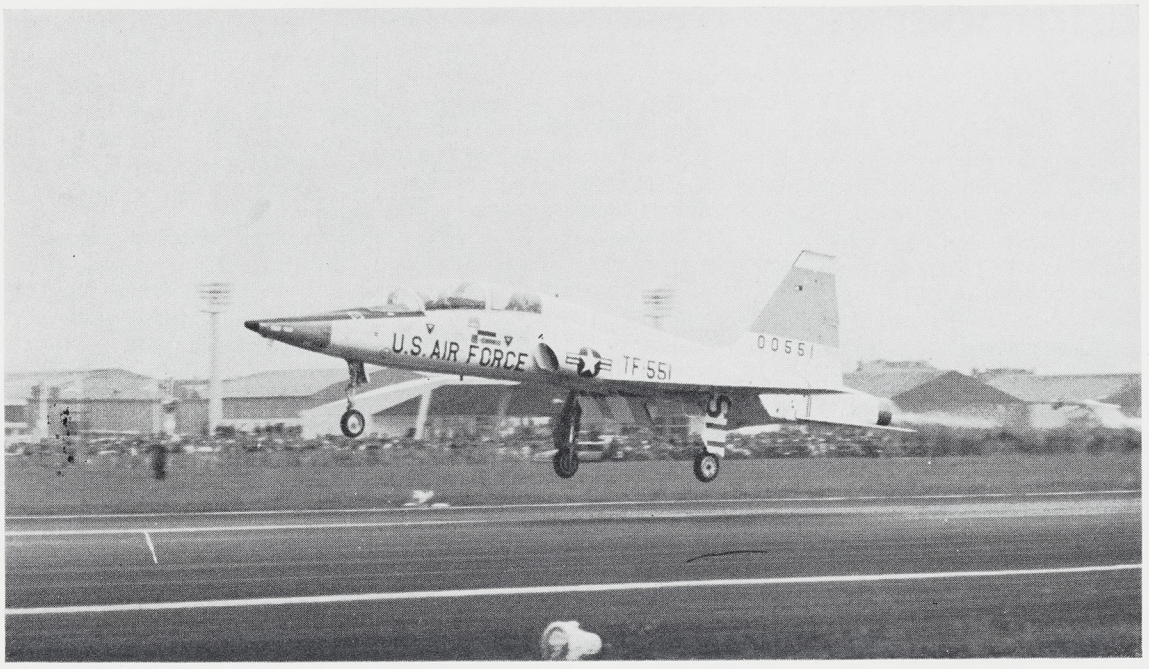
The next visit of the Red Cross mobile blood bank to Norair will be Thursday, August 17, it has been announced by Charles Boyle, supervisor, Personnel Activities.

The Blood Mobile will be at the Product Display Building which is near the center of the field adjacent to the Administration Building. Time of the visit is 7:30 a.m. to 12:30 p.m.

Blood donors will be drawn from the Main Plant, Nortronics-Broadway Plant, Crenshaw, the Administration Building, and the Engineering Science Center.

Donor forms are now available from organization clerks.

Talon Stars at Paris Air Show



TALON IN PARIS—T-38 Talon lifts her gear from runway at Le Bourget during recent Paris international air show. Field is same that Charles A. Lindbergh landed his "Spirit of St. Louis" on after flying the Atlantic alone back in the nineteen twenties. Photo was sent to Northrop by Robert B. Hotz, editor, Aviation Week. It was taken by their ace aerospace photographer Russell Melcher.

NORAIR CONTRACTS TO INSTALL PACE PROGRAM FOR U. S. NAVY

The Navy Department's Bureau of Weapons has awarded a contract to Norair Division for a PACE program installation at Quonset Point, Rhode Island, it has been announced by D. N. Petersen, director, PACE Services section.

The contract, which followed a comprehensive series of PACE presentations and negotiations, calls for a pilot installation within the facilities of the U. S. Naval Air Station Overhaul and Repair Depot at the Rhode Island complex.

The work got underway last week.

R. M. Wrestler, general supervisor, PACE Services section, will personally direct and supervise the installation. William R. Prassas, previously project supervisor, Engineering PACE program at Norair, will head the team of PACE personnel on site at Quonset Point. Other members of the team include J. A. Parks and T. M. Frederick, senior PACE analysts and G. A. Hunt and J. P. McDonald, instructors.

In addition, the Astronautics Division of General Dynamics Corporation, San Diego, has contracted for the installation of a pilot PACE program within their facilities. N. A. Nicholson, who recently completed the final phases of the highly successful PACE program installation at Boeing Airplane Company, Aero-Space Division, Seattle, Washington, is project supervisor on the Astronautics installation. Initial phases are already underway.

Assisting Mr. Nicholson at Astronautics are Manuel Rabins and Leonard Thorne, senior PACE analysts; and Max Lester, instructor.

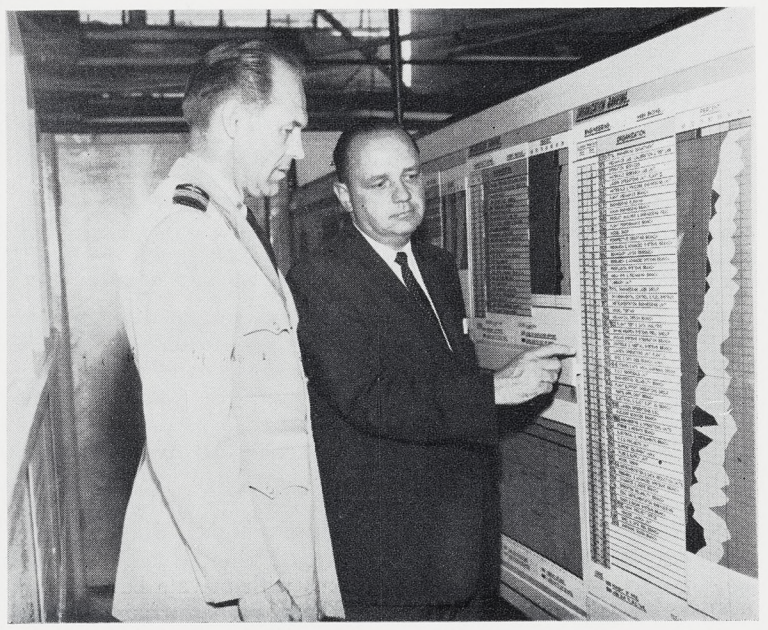
A pilot PACE program installation within the Engineering Department facilities of the Convair-San Diego Division of General Dynamics Corporation has been successfully completed. This project was under the supervision of Mr. Wrestler, assisted by Eric von Hurst, senior PACE analyst.

Radioplane 'Chute Does The Job Again

Astronaut Virgil (Gus) I. Grissom and his Mercury capsule were landed safely in the South Atlantic last week by a parachute landing system designed and built by the Northrop Corporation's Radioplane Division of Van Nuys, California.

Opening and perfect functioning of the drogue parachute and of the 63-foot diameter main parachute were clearly visible to project officials aboard ships in the landing area. The main parachute deposited the bell-shaped capsule gently in the relatively calm sea after having supported the spaceship during the critical four and one-half final minutes of its flight.

Northrop's Radioplane Division, which also is at work on recovery systems for other space vehicles, produces the Mercury landing system for the National Aeronautics and Space Administration under contract to McDonnell Aircraft Corporation.



NAVY PACE PROGRAM—Captain O. A. Soli, commander, U.S. Naval Air Station Overhaul and Repair facilities, Quonset Point, Rhode Island, visits Norair to discuss contract particulars with D. N. Petersen, director, PACE Services section. The Navy Department Bureau of Weapons has signed with Norair for pilot PACE program at Quonset Point. Work is already underway.

Norcrafter Talks on Beryllium Breakthrough

Lyle Christensen, Material Sciences and Value Engineering, and project manager on Norair's beryllium extrusion research and development program, spoke before an Air Force, Navy, Atomic Energy Commission and industry audience at Materials Central, Aeronautical System Division, last week.

Mr. Christensen discussed Norair's progress on extruding beryllium metal for use in space vehicles. His remarks were based on Norair's recent beryllium extrusion breakthrough wherein perfect extrusions up to 24 feet in length are being obtained. Important to the breakthrough is a newly developed lubricant which consists of a composite of iron, copper, and mica.

The meeting, held at Wright-Patterson Air Force Base, was under the sponsorship of the High Strength Materials Section, Physical Metallurgy Branch, ASD.

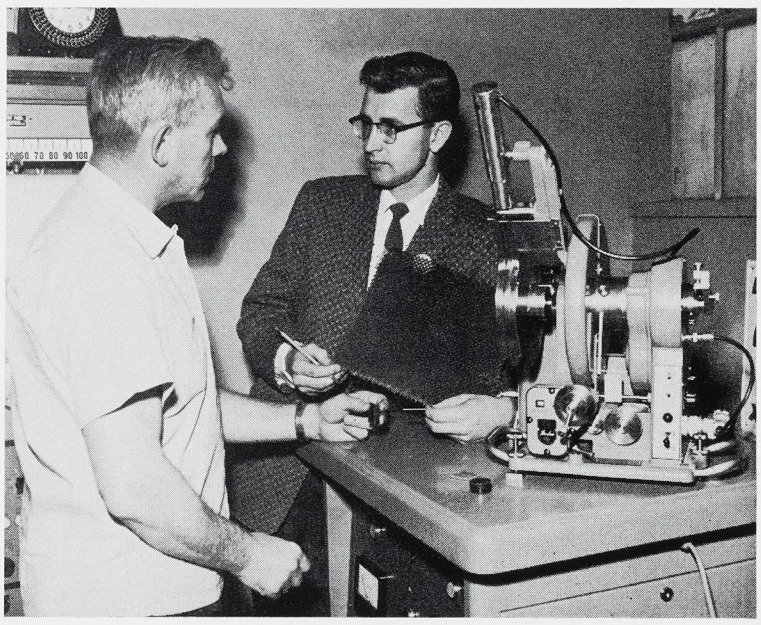
Norair has been working under contract with the Air Force for two years on beryllium extrusion research. Perfection of the lubricant, plus other methods and techniques, has brought about the fabrication of beryllium shapes that are defect-free and have surface finishes equivalent to aluminum extrusions.

Phase One of Norair's beryllium contract is now considered complete. In Phase Two, now getting underway, Norair will apply its new beryllium know-how to a large range of shapes and sizes, particularly in the thinner gauge ranges. The original work was done with thicknesses in the order of one-eighth of an inch.

X-ray Diffraction Studies Will Aid Norair Aerospace Research

A new and valuable aid to Norair's aerospace studies is the X-ray diffraction equipment recently installed in Material Sciences Laboratory, Material Sciences and Value Engineering, to assist Division scientists in their research into the behavior of aerospace materials.

Bill Williams and Del Gardner, Materials research engineers, who are conducting Norair's X-ray analytical work, say that X-ray diffraction techniques provide the most powerful single tool known for study of the structure of matter. In contrast to medical or industrial radiography they are concerned with X-rays diffracted by a material rather than those which pass through the material undeflected.



X-RAY DIFFRACTION EQUIPMENT—Norair Research Engineers Del Gardner and Bill Williams discuss preparation of samples for study of stainless steel prebrazed honeycomb cleaning processes for X-ray diffraction observations. New equipment—on stand—is a Norelco X-ray diffractometer. Geiger counter at top of machine detects diffracted X-rays. Recording of intensities and angular displacements is by strip-chart.

Crystalline materials diffract or "bounce" X-rays to form diffraction patterns which can be used to determine the type, composition, and conditions of the crystals present. The nature of metals, minerals, and other obviously crystalline materials have been studied in detail for many years (since 1912). In more recent years, X-ray diffraction studies have demonstrated that almost all inorganic substances are crystalline. Even materials such as rubber, plastics, and animal or vegetable tissue are at least partly crystalline. At Norair, X-ray diffraction will provide data on the crystalline and molecular structure upon which mechanical and physical properties of materials depend.

Norair's new equipment, a Norelco X-ray diffractometer, features Geiger counter detection of diffracted X-rays and strip-chart recording of the intensity and angular displacement of diffracted beams.

Specific solid state work will support studies in:

Recrystallization parameters of molybdenum, columbium, and tantalum alloys.

Oxidation mechanisms of, and protective coating systems for, refractory and superalloys.

Non-metallic dispersions in nickel.

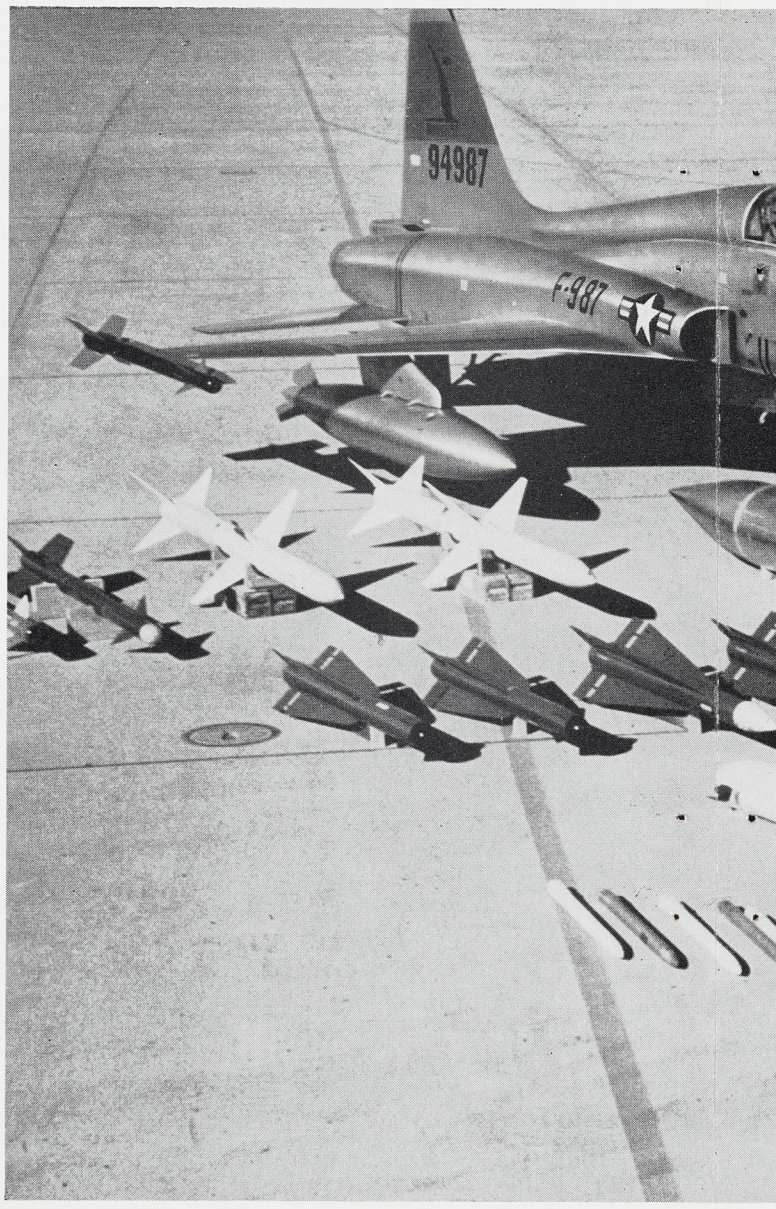
Identification and analysis of substances.

Determination of structure.

Non-destructive measurement of internal stress.

Measurement of crystalline size.

Such work will increase the understanding of the behavior of materials to further the constant effort to make better use of existing materials and to develop new, tailor-made materials for aerospace use.



LUCKY NORCRAFTERS TO GET FREE TRIP TO EUROPE

Certain lucky Norcrafters who decide to go on the NRC tour of Europe scheduled for this fall, will make the trip free of charge it is announced by Howard Cornelius, NRC Travel Club commissioner.

Just who will get the free trip will be decided by a drawing of lots a few weeks before the tour starts.

This is the way it works. The tour will nominally cost $889 a person with type of transportation depending on the number of paid-up reservations. The tour will be for 23 days. It is all inclusive. Air transportation, meals, lodgings, land transportation, tips and taxes are paid. Deadline for paid-in-full reservations has been set for September 1.

On September 4, the drawing will be held.

For 30 paid persons, one free pass will be drawn.

For 45 paid persons, two free passes will be drawn.

A full charter flight, 88 persons, on a Super Connie, three free passes.

For a full chartered jet, 120 paid, there will be five free passes.

As soon as the winners are established, they will get their $889 back. This ought to make for a most enjoyable trip.

Complete details are available at Personnel Activities.

After leaving United States, first tour stop will be London. The group will then proceed to Holland, Germany, Italy and France before returning home.

Also Travel Club news, calculated to be of high interest, is the Catalina holiday planned for the weekend following Labor Day, the 8, 9, and 10 of September. This weekend will get underway when Norcrafters go on board the Island's big white steamer, S. S. Catalina, Friday evening at 7:30 p.m. The party will arrive at Avalon at 9:30 p.m.

Lodging for both Friday and Saturday nights will be at the St. Catherine Hotel. Twin-bed rooms with private bath.

There will be surfing and sightseeing all day Saturday.

Saturday night there will be dinner and dancing at the Casino.

Return will be Sunday evening, departing Avalon at 4 p.m., with Wilmington arrival at 6 p.m.

Complete price for the weekend is pegged at $25 a person. Reservations which are limited, are now being taken at Personnel Activities. Closing date is August 18.

PORTABLE CABLE PAPER TO SERVE AS AIEE GUIDE

A paper entitled "Criteria Determination for Aerospace Equipment Electrical Portable Cable Assemblies," prepared jointly by Norcrafters T. A. Robinson and C. L. Hennigan, is being considered for publication by the AIEE, it is reported.

The discussion was originally presented before the AIEE's Aerospace Transportation Conference in June by Mr. Robinson, senior engineer.

The findings will be used as a design-guide report it is planned and will, in all probability, be of high long term value to the industry.

Both Mr. Robinson and Mr. Hennigan are in the Electrical Electronic Support Equipment branch.

Radioplane Realigns Engineering

M. W. Tuttle, corporate vice-president and general manager of the Radioplane Division, has announced realignment of Radioplane's engineering organization to provide greater emphasis on advanced systems research.

Under the direction of Dr. James B. Rea, recently appointed Radioplane vice-president and assistant general manager-technical, engineering will be divided into four major sections: Aerospace, Target and Tactical Systems; Aerospace Re-entry and Landing Systems; Advanced Systems Research and Development; and the Development Laboratories and Testing Section.

Buy Bonds

Ordnance Magazine Article By Norcrafter Draws Praise

Harold Tombach, Systems Analysis group, has received high praise from the American Ordnance Association for his recent article, "Intelligence Is The Key" which appeared in the July-August issue of Ordnance magazine. Praise for the work, which dealt with the critical importance of knowing military capabilities of potential adversaries, came by letter from Maj. General Edward P. Mechling, USAF (Retd.) and staff director, Technical Operations, AOA.

Mr. Tombach is supervisor of Norair Systems Requirements Branch.

In his article Mr. Tombach assessed earth satellites equipped with optical, electronic, and heat sensors and the part they will play in the nation's intelligence systems. He also wrote on radar methods, and the use of electronic computers in classifying and storing intelligence information.

He closed his article, commenting on reliabilities of intelligence, stating that ". . . investment in improved intelligence is, indeed, worthwhile. It can not be only our key to peace and prosperity, but may even be our key to survival."

New Classes Get Underway This Month

Norair Industrial Training Organization is offering classes in:

The Principles of Electricity, to start August 8. A class in the basics of electricity which include Ohm's Law, resistance, magnetism, induction and other related items.

Electronic Circuit Fundamentals, to start August 16. Prerequisite, satisfactory completion of the Principles of Electricity course or an equivalent electronic knowledge. The class covers power supplies, rectifiers, filters, voltage regulators, amplifiers and other related subjects.

Transistor Circuit Troubleshooting, to start August 21. Prerequisite, the completion of Principles of Electricity or an equivalent knowledge of basic electricity.

Management training courses designed for members of management and staff personnel being presented by Los Angeles Trade Technical College and due to start on September 11, include:

Basic Psychology for Supervisors.

Labor Management Relations.

Industrial Economics.

Written Communications for Supervisors.

Developing the Employees through training.

Reading Improvement.

All classes, including those at Industrial Training, will be "off company time."

Additional information can be obtained by calling Charles Beuchat, Station 2436.

Northrop-Norair News
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NORAIR DIVISION
CHARLES BRADFORD, Editor

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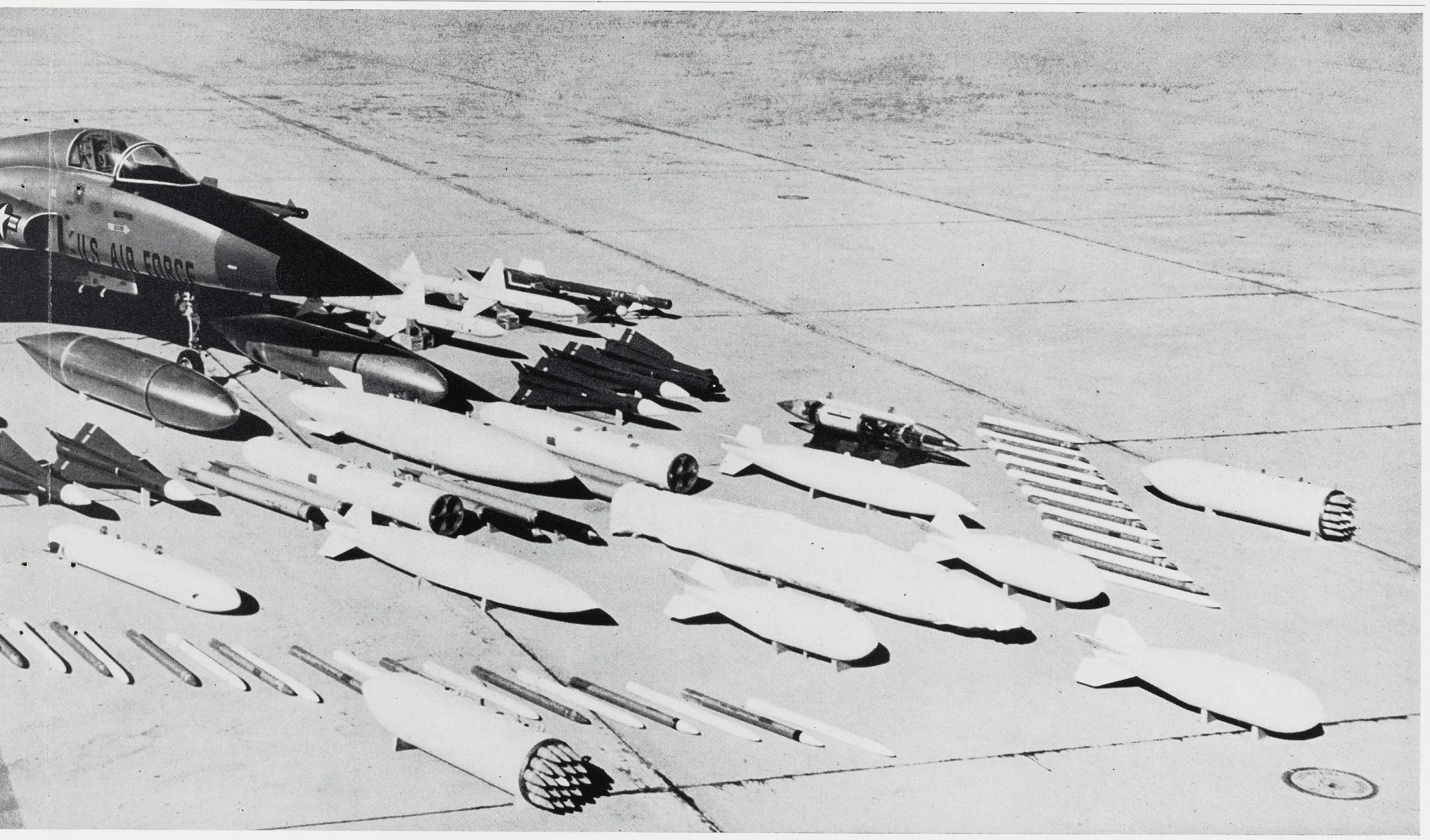


NEWS BRIEFS

(Continued from Page 1)

"The liberalized rate structure will permit salary raises to be granted on an individual basis rather than by the mass method. This enables recognition of individual progress. Norcrafter industry and ability are assured fair and adequate awards."

UNDERWATER COMMUNICATIONS—Northrop Corporation, principally through Page Communications Engineers, will participate in installation of a 700-mile extension to the existing underwater communications network, serving the Atlantic Missile Range.

The $5 million project will be a joint venture between the United States Underseas Cable Corporation, Northrop Corporation, Phelps-Dodge Corporation, and Felten and Guilleaume of West Germany.

USUCC is acting as over all operations manager.

CREDIT UNION—The Board of Directors of the Northrop Credit Union has reduced the rate of interest on Norcrafter home improvement loans from one per cent a month to ¾ of one per cent a month, effective 1 August 1961, it has been announced by Credit Union Manager Walter T. Gage. This reduced rate will also apply to all existing home improvement loans . . . This reduction in interest makes the Northrop Credit Union home improvement rates as low as any in the business, and in some cases lower. It also reflects the excellent financial condition of the Credit Union.

CONTRACTS—The Department of the Army's Office of the chief of Information has announced contracts to Northrop Corporation totaling nearly $10 million . . . Radioplane Division was awarded $2.5 million for RP-76 flight services at White Sands Missile Range, New Mexico . . . Nortronics Division received a $4 million contract for 112 guided missile launchers XM 78E3, and $3 million contract for 500 air compressors.

SECRETARIES TAKE PART IN LA CONCLAVE

Norair secretaries participated in the 16th Annual National Secretaries Association Convention held in Los Angeles.

Those attending were Pat Carlberg, secretary to Paul Wierk, director, Engineering Administration; Frances Jean, secretary to Frank Lyons, chief, Support Equipment group; Joan Olson, secretary to Milt Kuska, manager, Laminar Flow Control Technological Airplane Project Department; Edna Parker, secretary to Don Lewis, Nortronics treasurer; and Mattie Sherburne, secretary to Max Stanley, chief, Flight Support Operations.

Mattie is corresponding secretary of the NSA's airborne chapter.

More than 1200 members of the association from throughout the United States, Canada, Mexico, Puerto Rico and Finland were in attendance.

The convention presented as its key feature a series of study forums dealing with such subjects as "The Developing Role of the Secretary in Administrative Management," "Listening With The Third Ear," and "Rapid Reading."

LIGHTWEIGHT FIGHTER HEAVYWEIGHT PUNCH

CORPORATE ADS TELL MISSION OF N-156

The twin-jet supersonic Northrop N-156 is more than an aircraft; it is a complete family of lightweight fighter weapon systems designed to fulfill the many air support roles of limited war: close support of ground forces, reconnaissance and surveillance, interdiction, air defense and air superiority.

The N-156 can be deployed from the United States zone of interior to any point in the world within 24 to 48 hours. It can then be dispersed throughout the theater of operations, utilize advance bases with short, unimproved runways, and operate with minimum logistic support, fast turnaround and extremely low maintenance downtime.

Its high performance, extreme maneuverability and ease of handling have won the Northrop N-156 unanimous acclaim as a "pilot's airplane." An exceptionally safe and reliable aircraft with unusual aerodynamic stability, it can accomplish its mission, return and land safely with one engine out. Very low fuel consumption eases the storage and resupply problems likely to plague advance areas. Maintenance and service can be easily accomplished from ground level without crew stands. In short, from both a tactical and logistic point of view, the N-156 is ideally suited to the mission requirements and problems of limited warfare.

The economics of the Northrop N-156 are also highly favorable for limited warfare. Low initial cost plus exceptionally low operating and maintenance costs make it possible to greatly increase the number of units in the field for the same budget dollar. Simplicity of maintenance also reduces the number of trained personnel, the amount and complexity of ground support equipment needed in the field. The result is an extremely flexible force, able to respond effectively to pressures anywhere in the world in the shortest possible time, and with minimum dependence on the difficult supply posture likely to prevail in remote areas.

The foregoing advertisement appeared in Army, Navy, Air Force Journal; Army, Navy, Air Force Register; Aviation Week; Air Force; Army Aviation; and Army.

Pinochle Men

THE CHAMPS OF PALMDALE—Pinochle, that is. Tourney consisted of ten hands a day for 30 days, and partnership of Dick Van Buskirk, left and Gus Hayes, right, won it with a total score of 3749. Marshall McCain, Material and Manufacturing Control, proudly presents NRC trophies. Runner-up team was Wayne White and Chuck Hamilton. They totaled 3680.

RIDES WANTED

7 a.m. — 3:45 p.m.

PICO & WESTWOOD, West Los Angeles. Have car to offer for pool. Ed Prendergast, ext. 2327, GR 3-8581. 2

VERMONT & W. 228TH, Torrance. Fred Truiillo, ext. 1573, FA 8-5086. 2

7:30 a.m. — 4:15 p.m.

PICO & 4TH OR LINCOLN & STRAND, Santa Monica. Harlan P. Rutter, EX 2-2628. 3

CRENSHAW & HYDE PARK BLVDS., Los Angeles. Harriett Riat, ext. 1600, PL 3-0967. 3

WEST BLVD. & 54TH ST., Los Angeles. Bernice M. Hovey, ext. 1911, 2336, AX 1-6598. 3

8 a.m. — 4:45 p.m.

VERMONT OR NORMANDIE & 186TH ST., Gardena. Elizabeth Lewis, ext. 2045. DA 9-6753. 5

PRAIRIE & ARBOR VITAE, Inglewood. Rori Nordhausen, ext. 1487, OR 3-1189. 5

SILVER SPUR & PALOS VERDES, Palos Verdes. W. Sponsler. FR 5-8536. 5

WESTMINSTER AVE.—HWY. 39 (BEACH BLVD.). Westminster. F. C SLACK, ext. 1835, 1909, TW 7-4784. 5

LAKEWOOD BLVD. & IMPERIAL HWY., Downey. Via Imperial or Rosecrans Blvd. Morris Brown, ext. 474, TO 1-8508.

RIDES OFFERED

7 a.m. — 3:45 p.m.

PICO & WESTWOOD, West Los Angeles. Have car to offer for pool. Ed Prendergast, ext. 2327, GR 3-8581. 12

7:30 a.m. — 4:15 p.m.

PICO & 4TH OR LINCOLN & STRAND, Santa Monica. Harlan P. Rutter, EX 2-2628. 13

8 a.m. — 4:45 p.m.

SILVER SPUR & PALOS VERDES, Palos Verdes. W. Sponsler. FR 5-8536. 15

WESTMINSTER AVE.—HWY. 39 (BEACH BLVD.). Westminster. F. C SLACK, ext. 1835. 1909. TW 7-4784. 15

PIER AVE. & MANHATTAN AVE., Hermosa Beach. Time of departure is 7:15 a.m. Don L. Milligan, ext 1835, FR 4-2569. 15

LAKEWOOD BLVD. & IMPERIAL HWY., Downey. Via Imperial or Rosecrans Blvd. Morris Brown, ext. 474. TO 1-8508

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

ENGINE, 2.5 hp. West Bend, w/auto. clutch for go-kart, $15; bicycle, 26" Schwinn, needs minor repairs, $12.50. FR 5-6095. A

SOFA, Lawson style, 6', foam cushions, cinnamon brown texture w/gold thread upholstery, excellent style for any interior, $65. FR 8-2532. A

RANGE, Norge, $25; Westinghouse REFRIGERATOR, $50; BEDROOM SET, $75; DINETTE SET, $30; Bendix top load WASHER, $25; 17" TV, new picture tube, tuner & misc. tubes, $50; Gladiron MANGLE, $15; maple END TABLES, $30; maple CHAIR, $25; RECLINER, $25. OS 6-0626. A

PIANO, Chickering, cut down mirror type, covered in cream leatherette, matching bench, $150. TE 3-4272. A

CAMPER, Romer, over cab, 1961, 8½ ft., completely equipped, sleeps 4, $950. OR 1-6702. A

SWEEPER, Electrolux, with attachments, $25. OR 6-2162 A

STUDIO COUCH, 6', good condition, rust color, $15. EX 4-6944. A

CLOCK-RADIO, Zenith, with all deluxe features, $20. OR 7-8775. A

SETS, Great Books of the Western World, $250, Encyclopedia Britannica w/eleven Books of the Year, $100. FR 5-1737. A

MOVIE CAMERA, Revere, 8mm, Model 88 with special Nikkor f1.9 lens, $30. FA 2-3827. A

LAWN MOWER, 22", rotary, 2½ hp, Briggs-Stratton engine, mfg. by Savage Arms, used very little, original price, $55. $40. DA 9-0469. A

CAR COOLER, floor installation type, used twice, $25. FR 2-6916. A

HUDSON, 1955 Hornet, 4-dr., good condition, r/h, automatic trans., $400. OS 5-3866. A

FOR SALE

STEREO PHONOGRAPH, Motorola, 1960 model, portable, in good condition, w/new stereophonic needle, $35. OS 5-8091. A

FORD, 1956 Fairlane, 4-dr., r/h, factory air conditioner, standard trans., new battery, $600. OS 9-6581. A

HOUSEHOLD FURNISHINGS, Early American style, 30" red hurricane lamp, $45; bookcase, $35; birch end tables, $80 pair; dresser-desk comb., $40; settee, $40; birch tier table, $50; large picture, $35. OS 6-5921. A

TRAILER, teardrop, butane tank & stove, ice box, $100. DA 3-7877. A

AIR CONDITIONER, 110 v., Chrysler, Air Temp, 9000 btu, used 10 hrs., cost $225, $150. HA 9-2764. A

PRINZ 30, 1960, large engine, 10,000 miles, sky top, runs real good, $600. FR 9-5988. A

MOVIE PROJECTOR, 3D, new Compco Triad, $150. OS 6-3448. A

ACREAGE, 10 acres Salton Sea property on Hwy. 99 side, 3 miles from Hwy. 78, $350 an acre, terms, less for cash. FR 1-3781. A

STUDIO COUCH, makes double or twin beds, $40. DA 7-9084. A

HIGHLAND PARK E12 LAPIDARY, 1 buffer, 2 3"x8" & 2 8" sanders, 1 tumbler, 8# capacity, lots of cutting material, $150. DA 9-5845. A

BRAIDED RUG, 9x12, oval, brown & beige, 6-mo-old, $25. OR 2-8141. A

PUP, bloodhound, AKC reg., 10-mo.-old, male, $150. FR 4-2915. A

HOUSEHOLD FURNISHINGS, curved sectional, 3-pc., $75; tiltback chair & matching footstool, $35; step-up end tables, 1-pr., & coffee table, $10; matching lamps, 1-pr., $15. NE 5-0878. A

DESERT AIR LAMP, $30. NE 2-5603. A

HOUSE, San Fernando Valley, 3 bdrm. and den, 2 baths, disposal, beamed ceilings, cooler, birch cabinets, covered patio, fenced back yard, large, bearing walnut trees, young citrus, plants, shrubs, flowers 2-car garage, no assesments, full price, $16,750. $1500 dn., 5¼% loan on 1st T. D. EM 3-8297. A

WINTER BOWLING LEAGUES

Now Forming

Entry forms at P-A

WANTED TO BUY

HORSE TRAILER, single or double, not over $100. TE 4-9205. B

TABLE OR RADIAL ARM SAW, 8 or 10 inch, in good condition DA 3-5900. B

MARINE RADIO DIRECTION FINDER, portable transistorized. TO 1-6404. B

LAMP, florescent desk, fireplace screen, rug pad, approx 12x15. DA 9-5537. B

FREE (to be given away)

RABBIT, 4-mo-old, grey, w/cage. OS 6-6686. D

RENTALS OFFERED

HOUSE, 2-bdrm., unfur., 4 blocks from beach, fireplace, corner lot, sun deck, carpeting & drapes, $125 mo. on lease. FR 4-8757. E

DUPLEX, 2-bdrm., carpeted & draped, garage, private patio, in Westchester, $150 mo. OR 2-1775. E

HOUSE, 2-bdrm., furn., at Manhattan Beach, 300 ft. to ocean, available Aug. 1, summer rental $100 week, will consider lease. FR 4-3365. E

MOUNTAIN CABIN, Green Valley Lake, fishing, boating, swimming, sleeps 12, $65 wk. DA 4-5961. E

DUPLEX, 1-bdrm., front half of double, yard, child O.K., water & trash paid, garbage disposal, drapes, hardwood floors, near Alondra Park, $70. OS 5-6285. E

BACHELOR APT., furn. & utilities paid, 2 blocks from Norair. OS 9-3129. E

PERSONALS

TO OUR FELLOW WORKERS. Thanks so much for the many cards, plants, flowers, and contributions to the Heart Fund in honor of Dorothy. It was very comforting to her family to know Dorothy had so very many friends. Ralph G. Brant & Family. L

FOR SALE OR TRADE

HOUSE TRAILER—1955 Lone Star, bal. $2388, $68.48 per mo., 2 bdrm. & bath furn., 42 ft. long, 8 ft. wide, awning, 2 gas tanks, will take furniture or house or some cash for down payment. DA 5-3897. M

WASHER-DRYER, 1958 GE combination, all electric, $50, or trade for freezer chest. FA 1-1326. M

WATCH, white gold lapel, 17 jewel, rhinestone, heart-shaped, cost approx. $200. $50; skates, rink, black shoes, professional, roller precision, cost $96, $45; pipe dies, Toledo, 1" through 2", complete with guides, $20. Will trade for what have you of equal value. WI 7-7867, Palmdale or Clifford 8-2111, EAFB. M

NRC Vignette #14

NRC Model Railroad Club

THE NRC MODEL RAILROAD CLUB—One of the most fascinating club activities, especially for dad and son, on the NRC Good Time Table list is the NRC Model Railroad Club. The group meets each Thursday evening at the NRC clubhouse for an evening of real railroading, adding to their system equipment, trying out their "strings," and generally having a real good high iron time. Photographs show complexities of trackage which seems to have grown as the years passed until presently their quarters are filled with a maze of finely engineered equipment. "Hogheads" shown in the photo are members, Roy Everz, Tom Brunner, Ray Brown (front), and Jack Wilson, commissioner. It is easy to see that the NRC MRR folk cling to the days of steam. A coal burner and an oil burner in the foreground await track repairs by Ray. In the background, Tom and Jack seem to be having trouble with that modern-day streamliner. Whatever your model railroading pleasure, it stands to be satisfied if you join the Model Railroad Club. NRC furnishes materials for the system and tools to help build it. Members own their own rolling stock. Let's high ball. We've got a green board. Altoona is 90 miles away!

SWING, CHA-CHA FOX TROT CLASS AT CLUBHOUSE

There will be another novice dancing class in swing, cha cha, fox trot, and waltz it has been announced by Wes Williams, Norair NRC Dancing Class commissioner. The group will meet Thursdays, 7 to 8:30 p.m. at the Clubhouse Annex, states Wes.

Direction and instructions will be conducted by M. W. Lewellin, who has won international honors in dancing.

Lake Cassitas Trek for NRC Campers Saturday

The NRC camping group will hold a campout at Foster Park, near Lake Cassitas on this weekend, August 5 and 6, it has been announced by Fred Armstrong, commissioner.

Those attending, and all are invited, are instructed to take Highway 399 from Ventura, and travel six miles until you reach the Lake Cassitas sign. Cost is one dollar a night for each family.

"Swimming and fishing is nearby at either Lake Cassitas or the beach," states Fred.

A potluck dinner will be held Saturday, at 5:30 p.m. Norcrafters are asked to bring their own table service and their favorite type of Mulligan stew.

NRC Good Time Table for August

For enrollment or information on activities listed below, call or contact Personnel Activities, Plant One, extension 2784. All clubs meet at the NRC Clubhouse unless otherwise noted.

ART CLUB, Stewart Luce
Meets Thursdays, 7-10 p.m., Joe Kalina's Studio, 3234 W. 157th St., Gardena.

BALLROOM DANCE CLASS, Wes Williams
Two classes 7-8:30 p.m. and 8:30-10 p.m. every Thursday. Newcomers welcome to visit.

BIBLE STUDY, C. J. McGuire
Plant I—Daily, 11:30-12:15, Tool Design Bldg., 11-11:45, 5566 Conf. Room.
Plant II—Mondays & Thursdays, 12-12:45, Conf. Room 2.
Eng. Center—Daily 12-12:45, Reliability Conf. Room.

BOAT CLUB, Sandy Friedfeld

BOWLING, Earl Saunders
Winter Leagues forming. Obtain entry forms at P. A.

BOY SCOUTS
Sea Scouts meet Tuesdays, 7:30 p.m.
Cub Scouts meet 4th Friday, 7:30 p.m.
Boy Scouts meet Thursdays, 7:30 p.m.

CAMERA CLUB (days), Howard Butler
Meet 1st and 3rd Wednesdays, 7:30 p.m. Special stereo show and speaker at Aug. 2 meeting.

CAMPING CLUB, Fred Armstrong
Meet 1st Wednesday, 7:30 p.m. Foster Park outing Aug. 5 & 6.

CHESS CLUB, Loy Bennett
Meets 1st & 3rd Fridays, 7:30 p.m.

FISHING CLUB, Harold Rapella
Charter boat. "New Longfin", Aug. 26, $12. Also "Tom Cat", Aug. 19, $10.

GEM & MINERAL CLUB (days) Bill Puniwai
Meets 2nd Wednesday, 8 p.m. Special movies Aug. 23 & 30 at 8 p.m.

GEM & MINERAL CLUB (nights), Doyle Shook
Meeting place varies. Meet 1st Wednesday, 1 p.m.

GOLF, Ken Clayton
Hesperia, Aug. 13, 11:30 a.m. Cost $5.50. Entries open Aug. 7. Limit 108 golfers.

MIXED CHORUS, Ron Henderson
No meetings in August.

MODEL RAILROAD, Jack Wilson
Meets Thursdays, 7-10 p.m. Visitors welcome.

RADIO CLUB, Paul Serafin
Meet last Thursday, 7:30 p.m. Radio code class meets Tuesdays, Wednesdays, Thursdays, 7:30 p.m. NRC's station is W6VPZ.

RIDING CLUB, Tex Statley
Evening meeting and trail ride Aug. 27, 5 p.m. at T & L Stables, 2642 River Ave., So. San Gabriel. Horses $1 an hour.

SKEET CLUB, Bob Bagby
Shoots alternating Saturdays at Rancho Angelus Range, Main & Broadway, 10 a.m., Aug. 12 & 26. Trophy shoot Aug. 26.

SKIN DIVING, Ralph Gonzales
Meet 3rd Monday, 7:30 p.m.

SOFTBALL, Mac McConnell
League play, Lennox Park, Wednesdays. New players welcome.

SPORTS CAR CLUB, Lou Perry
Meet 2nd Monday, 7:30 p.m. Aug. 26 & 27 Huntington Lake Hare & Hound overnight rallye.

SQUARE DANCING, Dick Rinehart
Fridays, 8-11 p.m., Ralph Hill's Hall, 15701 S. Crenshaw.

SURF FISHING, John Pawlicki
Meets 1st Tuesday, 7:30 p.m. Special movie, "Fishing Season". Speaker, T. Hickman, game warden.

SWIMMING
Leuzinger High School every Tuesday, Wednesday, Thursday, 4-45-6:45 p.m. Closes August 24.

TENNIS, John Potts
Free instruction & ladder matches. Saturdays, 10 a.m. at El Camino Jr. College.

TOASTMASTERS 212 (days)
Meet at Cockatoo Inn Thursdays, 6:30 p.m.

TRAVEL CLUB, Howard Cornelius
Meets 1st Monday, 7:00 p.m. European trip, 23 days, cost $889, Sept. 30-Oct. 22.

FOR THE LADIES

BOWLING, Corinne Davis
Winter Leagues forming. Obtain entry forms at P.A.

GIRL SCOUTS
Mariners, Tuesday, 7 p.m., Naval Reserve Center, 201 W. 126th St., Hawthorne, ages 13-18. All Norcrafter girls welcome.

KNITTING, Vera de Villiers
Meets Thursday at 6203 W. 87th St., L.A. (Westchester) 7:30 p.m. Free instruction each meeting.

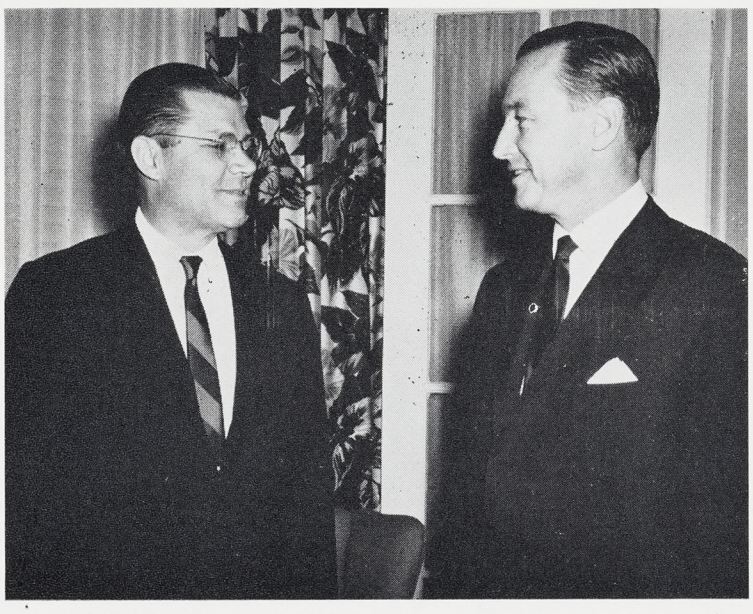
PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, August 16, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

Washington Conference



WASHINGTON, D.C.—Secretary of the Department of Defense Robert McNamara, discusses matters of industry progress with Northrop Corporation President Thomas V. Jones in the nation's capitol. Occasion was recent high-level conference of the National Security Industrial Association. Meeting was for two days. Agenda dealt with profit motive and cost reduction in defense production.

SCHOOLHOUSE OPEN HOUSE—Next Sunday, August 20, Norcrafters are invited to preview Division's concept for the newest construction methods in school buildings. In photo, taken at building site, Crenshaw and 120th, Commercial Products Norcrafters Elaine Kortz, administrative assistant, and Elaine Stewart, administrative secretary, demonstrate functional features of the buildings. Display is complete, includes flagpole, lawn, and blooming flowers. Time of open house is 1 to 5 p.m.

NEWS BRIEFS

AT RAPID CITY—George Gore, secretary and assistant corporation counsel, spoke before the T-2 Site Management Club, Rapid City, South Dakota, last week. Mr. Gore, who spent his childhood in the area, recalled early incidents and marked the vast changes now taking place under stimulus of the aerospace age . . . In reporting Company affairs, he gave progress and activity status on the different divisions and outlined prospects for the future. Mr. Gore was also entertained by local service clubs in Rapid City during his stay.

ON TIME, ALL COMMITMENTS MET—Corporate Vice-president and Norair General Manager Dick Nolan, reports that the Division has been concurrent—on time, and with all commitments met—on all Air Force contracts and assignments for the past 11 months. This status was first achieved last October and has continued without interruption ever since. (See News Briefs, 21 December 1960) . . . Important and highly significant factor—in an accomplishment which Norair feels stands alone in the industry—is result of Automated Operations Control as applied to fabrication and assembly. AOC, which preceded but now functions in support of the Division's overall Integrated Management Systems program, has reduced former weeks-long problems of shortages, planning and engineering changes, lost parts, spares orders, call contracts, and even cancellations, to a matter of 24 hours reaction time. Plans are now under way to widen scope of AOC to Tool Engineering operations including Tool Design, Tool Fabrication, and Production Planning . . . Other innovations which implement Norair's management control processes under the Integrated Management Systems concept include Integrated Cost Control, (now in operation), Central Parts Listing, (being implemented), and for the near future Materiel Mechanization, Production Planning Mechanization with labor pick-up through AOC, and Logistics Computer System.

T-38 PROGRESS—Twenty T-38 Talon aircraft have been delivered to Air Training Command at Randolph Air Force Base to date, it has been announced . . . First delivery was in March of this year. (See Norair News, 29 March 1961.) There have been 2171 flights for a total of 985 hours. With ATC's instructor-pilots all qualified, first student class is due to start through the mill in September. This class, a test class operation in Category III, will number 25 student officers. First regular class is scheduled for October at Webb Air Force Base, Big Springs, Texas.

Buy BONDS

Norcrafters to Preview Division Educational Facilities Concept

Schoolhouse open house. Sunday, August 20 from 1 to 5 p.m.

Norair will stage open house for all Norcrafters to come and view the results of a two-year research program aimed toward developing a new building technique for school construction.

Two display buildings, one square and one hexagonal, have been erected on Northrop property at Crenshaw Boulevard and 120th Street as first test units.

The open house marks completion of the initial phase of design and engineering effort. Additional pilot units are scheduled to be tested by school districts in various locations.

Parking will be provided in the adjacent Norair lot.

Personnel from Commercial

(Continued on Page 2)

$5 Million In Assets FY 1961-62

Northrop Corporation will invest nearly $5 million in capital asset improvements at Norair Division during the current fiscal year, 1961-62, it has been announced by President Thomas V. Jones.

In commenting on the program, Corporate Vice-president and Norair General Manager Dick Nolan, stated, "New facilities, implementation of test and research activities, an aggressive machine and fabrication tool modernization program, plus acquisition of completely new and exotic equipment required by the advancing aerospace technologies, will be major factors in this year's asset schedule.

"Plant improvement and added capabilities all along the line help us maintain our low cost position and enable us to consistently upgrade the quality of our products.

"This year's asset monies when added to those of the past five years will bring Norair's share of the Corporate asset program for the period to well over $24 million. Our excellent schedule position, our low cost performance, and our scientific

(Continued on Page 2)

Gibian Named Chief, General Purchasing

F. M. Gibian has been appointed chief, General Purchasing, Norair Division, it has been announced by Carl Hood, director of Materiel.

Mr. Gibian succeeds former longtime Purchasing Chief D. L. Miller who has resigned to devote his time to personal business.

With an extensive managerial

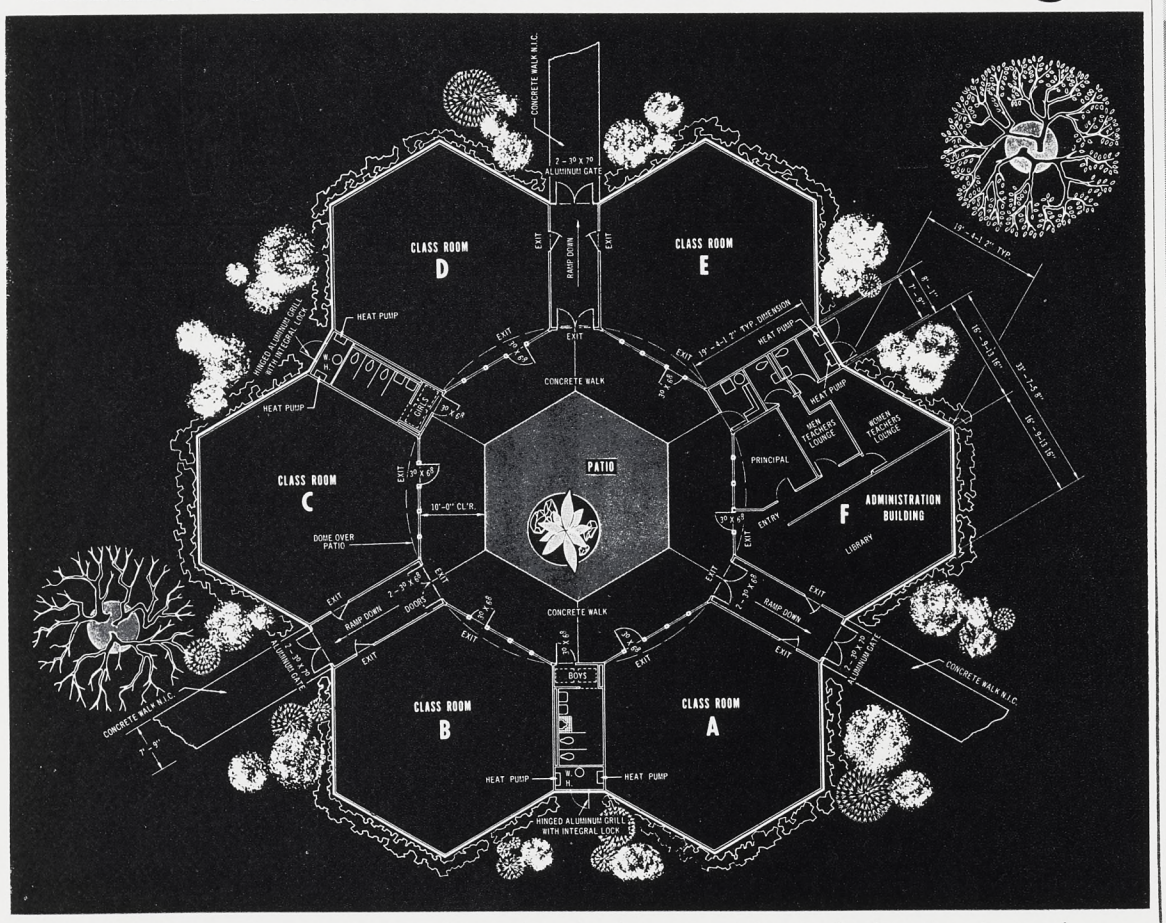
(Continued on Page 2)

F. M. GIBIAN

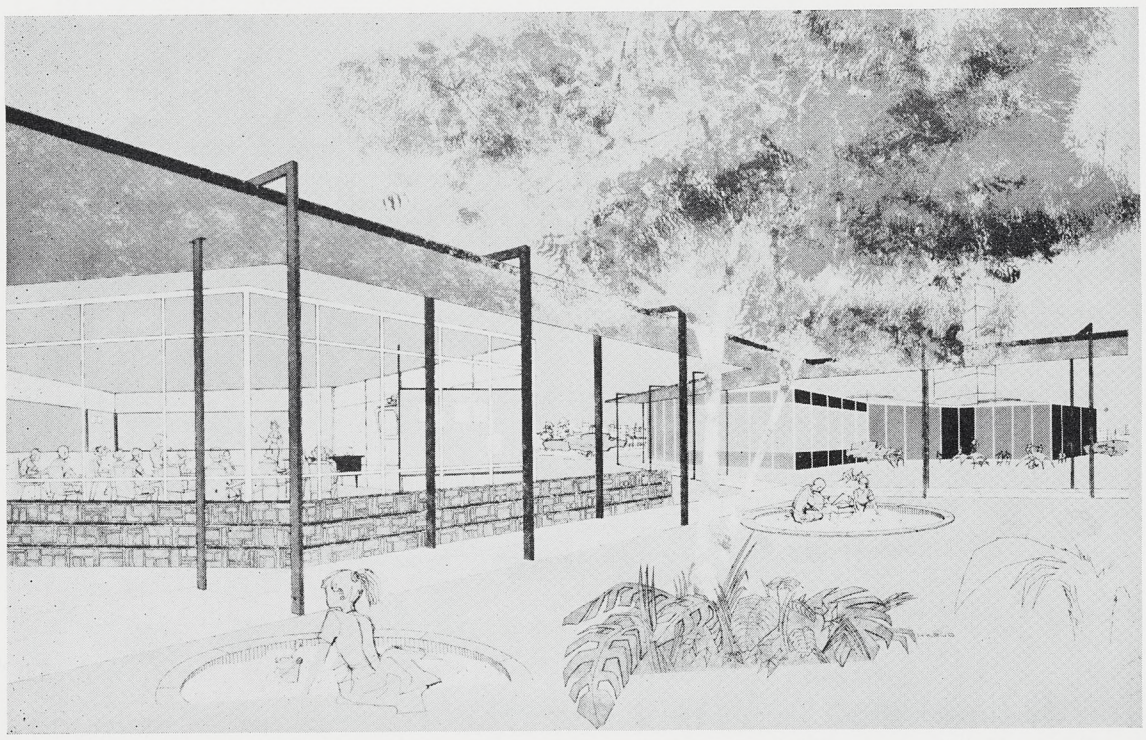
On Loan

RED FEATHER—Don Kohler, Norair Personnel Activities, is now on Northrop Corporation loan serving as a volunteer in the upcoming Los Angeles area Community Chest campaign. Don will chairman the public employees division for Westchester, Inglewood, Lennox, Hawthorne, Lawndale, Hermosa Beach, Manhattan Beach, El Segundo, and Playa Del Rey. Community Chest campaign will be held in October.

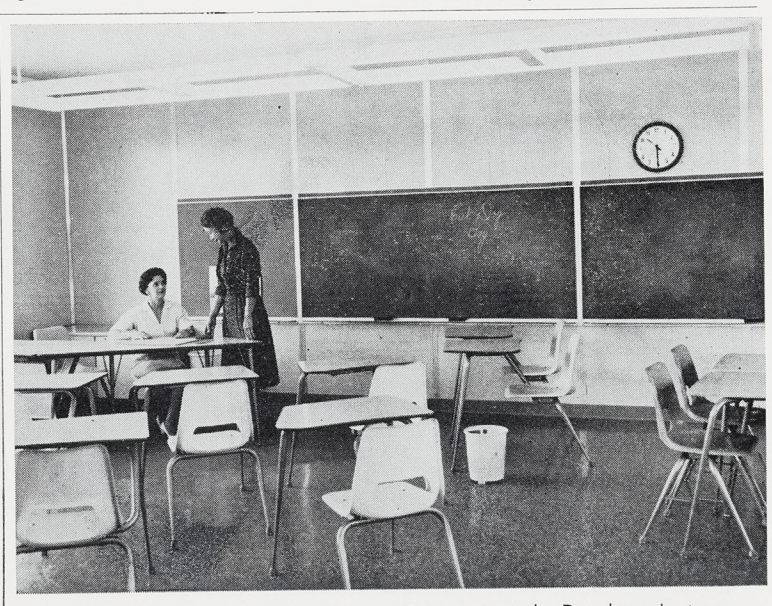
Artist Sees New School Buildings



HEXAGONAL—Typical master floor plan for hexagonal form of educational complex. Optimum in classroom flexibility is provided. Increases in student load can be accommodated by adding modular sections. Materials used will not support termites, vermin, fungus or rot. Interior partitions may be quickly installed or removed.



FOR FUTURE SCIENTISTS—Note designed-in attention to light, space. All materials have been extensively tested. Use of aluminum, plastics, ceramics, and glass is combined to form durable, aesthetic structure. Solid wall area is laminate construction for strength. Schoolhouses were not like this in your editor's three R's time!



INTERIOR—Typical interior. Commercial Products' two Elaines try teacher's desk, check blackboard for writability. Lighting is indirect. Color dynamics via judicious use of pastels, give students definite, yet subliminal lift.

Schoolhouse Preview

(Continued from Page 1)

Products, Marketing, will be on hand to brief visitors and explain features of this new concept in educational housing.

These "new dimensions in classroom design" offer contemporary enclosures that are readily adaptable to changing educational requirements. Aluminum, plastics, ceramics, and glass have been combined to form a durable, aesthetic structure.

LONG LIFE

Designed for many years of useful life, all construction materials were extensively tested before being approved for use. Exterior materials are treated to prevent weathering and corrosion. The absence of unprocessed wood eliminates warping; the careful selection of surface materials (wall, roof, and floor) enables the school system to substantially reduce maintenance costs.

Both the hexagonal and square floor plans provide the optimum in classroom flexibility. Increases in student enrollment can be accommodated by adding modular sections: interior partitions may be quickly installed or removed depending on teacher requirements. Damaged panels or complete walls may be replaced without using special tools or disturbing other sections of the structure.

CONSULTANTS

Charles Luckman Associates, internationally recognized architectural firm and designers of the Norair Engineering Center, served as architectural consultant during the early stages of development. Valuable educational consultation was also furnished by Dr. Harold B. Gores, Educational Facilities Laboratories (a Ford Foundation affiliate), New York City, and Dr. James MacConnell, director of the Stanford School Planning Laboratory. Many other prominent architects, educators, engineers, and Norair suppliers contributed to the research program.

Although extensive testing and evaluation under actual conditions still remain, the gratifying results achieved so far indicate that the Northrop building technique promises to become one of the most significant advances in classroom construction.

MANGURIAN TO SERVE SECOND YEAR FOR NASA

George Mangurian, director, Technical section, will serve for the second consecutive year as a member of the National Aeronautics and Space Administration, Research Advisory Committee on Aircraft Structures, it has been announced.

The NASA's committee on Aircraft Structures meets to render advice and assistance to the Administration on:

(1) Research on structural environment and design conditions of aircraft, including evaluation of missions and operations, critical ground and flight loads and load distribution, and thermal loads.

(2) Research on characteristics of aircraft structures, including strength, stiffness, vibration modes and frequencies, thermal resistance, and structural efficiency.

(3) Research on structural behavior and responses, including failure modes such as fatigue, aerothermoelastic and instability phenomena and forced vibrations.

(4) Structural safety and reliability as determined by combined effects of environment, structural characteristics and responses.

Asset Improvements

(Continued from Page 1)

breakthroughs in such fields as Laminar Flow Control, metal bonding, generation of space engine power, and processing of new raw materials, would not have been possible had we neglected to provide the proper facilities, and the right tools to do the job.

"Our asset program will continue without letdown in the years to come," Mr. Nolan concluded.

Added assets in engineering and scientific areas are to be headlined by:

1. Norair's new TRIGA reactor, a facility which will be used to study radiation effects such as might prevail in the vicinity of solar flares, within the Van Allen radiation belts, or aboard nuclear powered vehicles.

2. The new hypersonic wind tunnel which will provide supersonic circuit ranges from Mach 1.5 to Mach 5, and hypersonic ranges of Mach 6 through Mach 14. The extensive range of this facility will provide a research and development tool capable of work from the low supersonic flight regimes to orbital and reentry flight mechanics.

Fifteen thousand square feet of laboratory space will be added in the high bay area of the Astro Sciences building.

A hypervelocity gun for the investigation of meteorite impingement is being developed. This facility will advance state-of-the-art in particle propulsion from the present 46,000 feet a second to over 100,000 feet a second.

The Calibrations and Standards lab will get additional floorspace and new equipment necessary to perform measurements of higher accuracy and to handle assignments of entirely new space age nature.

Computing and data processing equipment will be added both in the Center for increased integration of plant control data and for "on location" use in support of engineering and test projects.

In Manufacturing, the new and highly potent management tool of Automated Operations Control, now applied to fabrication and assembly, is to be added to Tool Engineering including Tool Design, Tool Fabrication, and Production Planning.

The Dynatorque feature of automatic feed control now being used with great success on LFC wing slotting will be added to the Division's high output milling machine complex.

One of the major programs, as stated by Mr. Nolan, will be the continued intensive improvement program to modernize and upgrade factory capability to parallel the nationwide Air Force program of retiring old tools in favor of new equipment when detailed cost analyses prove that materials and products can be produced at lower cost and with higher quality.

Gibian

(Continued from Page 1)

background, Mr. Gibian, whose Northrop career goes back to earliest days of the Company, has held positions as superintendent of Production Engineering, 1942-46; executive assistant in the General Manager's office, 1946-47; manager of Prothesis Development, 1947-48; and manager of General Office Administration, Anaheim, 1951-58.

His most recent position has been that of assistant to vice-president of Manufacturing.

Mr. Gibian was educated at the Illinois Institute of Technology where he received a B.S. in mechanical engineering.

In addition to Northrop, he has worked in key positions at Douglas, The Martin Company, and the Sierra Engineering Company.

Northrop-Norair News

VOL. 19 No. 19

1001 E. Broadway, Hawthorne, Calif.
A NORTHROP CORPORATION PUBLICATION
Published every other Wednesday
NORAIR DIVISION

CHARLES BRADFORD, Editor

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HAWTHORNE COMMUNITY FAIR—The NRC Riding Club championship parade team headed by J. W. "Tex" Statley, commissioner, dressed in western finery, rides in the Hawthorne Community Fair held during the last week in July.

THE SYMPHONAIRES—The NRC Symphonaires, Ron Henderson, commissioner, decorate a lovely float as part of Company participation. NRC theme was "Way Out On Cloud Nine". Symphonaires' float was designed by Stewart Luce, Art Club commissioner. It was constructed by the NRC Sea-Maids and Sea Gulls.

"ADVENTURES IN SPACE" COMMUNITY FAIR THEME

Norair and Nortronics took an active part in the annual Kiwanis Club Hawthorne Community Fair held during the last week in July.

Theme of the Fair "Adventures in Space" provided excellent opportunity for industry in the area to display its wares.

Norair and Nortronics used the highly sophisticated trans-

LAST REMINDER

Blood Bank

THURSDAY AUGUST 17

Product Display Building.

Make appointments directly with Personnel Activities, extension 2784.

light display consisting of colored photographs of products which recently made an outstanding hit at the Paris Air Show.

On the personnel side, the NRC was represented by "Way Out On Cloud Nine" theme featuring an NRC Symphonaires float and the Southland champion parade team from the NRC Riding Club.

The NRC Symphonaires float was designed by Art Club Commissioner Stewart Luce and constructed by NRC Sea-Maids and Sea Gulls.

In addition, Norair medical personnel headed by Doctors Krebsbach and Fitzgerald, assisted by Nurses Barbara Durr and Marian Huffman, manned the Fair's Junior Chamber of Commerce polio clinic.

Movie star Jayne Mansfield was grand marshal.

More than 25,000 persons attended.

Funds derived from the Fair are used to provide recreation for youth in the community.

NRC SPORTS CAR CLUB TOUR TO HIGH SIERRAS

The Sports Car Club is preparing for their "Touring, Sleeping Out Society" to get under way August 26, it is announced by Lou Perry, commissioner.

The tour terminates at Huntington Lake in the High Sierras, northeast of Fresno.

Departure is from Parking Lot H at 6 a.m., Crenshaw and 120th Street.

Activities, once the Club arrives at Huntington Lake, include campout and campfire singing. Fishing is also in order.

Participants are advised that Huntington Lake is at 8000 feet elevation. Warm clothing will be needed. Also, food, sleeping bags, and other items essential to mountain comfort.

NRC Travel Club Plans Catalina Trip

Norcrafters are reminded that the NRC Travel Club, Howard Cornelius, commissioner, plans a three-day holiday to Catalina Island, September 8, 9, and 10. (See Norair News, August 2, 1961.)

The outing will be limited to 60 persons.

The cost will be $25 each which includes round trip on the Catalina Island steamer, Friday and Saturday night at Hotel St. Catherine, and dinner and dance at the Catalina Island Casino.

Departure has been scheduled from the Catalina terminal at the foot of Avalon Boulevard at 7 p.m. Friday after work. Return will be 4 p.m. Sunday afternoon.

Reservations will remain open at Personnel Activities until August 18, says Howard.

A BIG SUCCESS—The Roaring '20s Bowling Ball, held last week in July at the NRC Clubhouse, proved to be one of the outstanding NRC successes of the entire year. Photo shows dancing under way with cloud of balloon "meteorites" just overhead. Good time was had by all with no exceptions. The Charleston was most popular dance step.

SET THE RECORD STRAIGHT ON HOME ADDRESSES

Norcrafters are reminded that it is important that their correct address be on file with Personnel.

Old, incorrect addresses can cause trouble.

As an example, during a recent emergency, 25 calls were made in vain attempts to contact one Norcrafter at his home.

If you have moved, or changed your marital status, set the record straight through your organization clerk.

The wrong address can hurt in an emergency.

The wrong marital status can hurt with the income tax.

NORCRAFTER PRESENTS SCIENCE PAPER

Warren C. Schreyer, supervisor of Laboratory Research and Development, presented a paper on "The Applications of the Electro-Hydraulic Shaker", before the local chapter of the Institute of Environmental Sciences on August 7, 1961. Additional papers, with the same subject, were presented by Jay Adler, Royal Industries and J. J. Kavanaugh, Convair General Dynamics Corporation.

Mr. Schreyer's talk was documented with slides and a 3-minute film.

Nick Nicholson and Son

THE GREAT NORTHWEST — Norair PACE man, Nick Nicholson and seven-year old son, Paul, proudly display a king salmon, 12 pounds—caught by dad, and two sharks—on dock, caught by son, after a day of fishing in the Puget Sound. Upon completion of Boeing PACE project, Nick was sent immediately to take charge of Convair Astronautics PACE installation. He promises photos of not yet caught 25-pound albacore next, he hopes.

NORAIR CAFETERIA

Monday, Tuesday, Wednesday
August 21, 22, 23

WHEN THE BELL TOLLS IT'S FREE

You may be the lucky one.

RIDES WANTED

7 a.m. — 3:45 p.m.

TULITA & PROSPECT, Redondo Beach. Helen C. Clark, ext. 1912, FR 8-2587. 2

7:30 a.m. — 4:15 p.m.

CRENSHAW & HYDE PARK BLVD., Los Angeles. Harriett Riat, ext. 1600, PL 3-0967. 3

HAWTHORNE BLVD. & 104TH ST., Inglewood. Ann Patterson, ext. 1852. 3

LINCOLN & MANCHESTER, Los Angeles. D. H. Baxter, ext. 691, OR 0-2014. 3

LOS ALAMITOS BLVD. & BRADBURY RD., Rossmoor. J. C. Green, ext. 1873, GE 0-3267. 3

8 a.m. — 4:45 p.m.

HIGHLAND & LONGFELLOW, Hermosa Beach. Miriam Boyack, ext. 557, 558, FR 2-0065. 5

LONG BEACH BLVD. & IOWA AVE., South Gate. Sheila H. Ondrasek, LO 4-5090. 5

ENCINAL CANYON & 101 HIGHWAY, Malibu. Phyllis Ellis, ext. 477, GL 7-7411. 5

ATLANTIC AVE. & HARDING ST., Long Beach. Robert H. Burner, ext. 474, GA 2-5152. 5

ANAHEIM & LONG BEACH BLVD., Long Beach. Ride wanted from Long Beach or Del Amo & Susanna vicinity. Phyllis Flink, ext. 2521, HE 7-6791. 5

RIDES OFFERED

8 a.m. — 4:45 p.m.

ENCINAL CANYON & 101 HIGHWAY, Malibu. Phyllis Ellis, ext. 477, GL 7-7411. 15

ATLANTIC AVE. & HARDING ST., Long Beach. Robert H. Burner, ext. 474, GA 2-5152. 15

ANAHEIM & LONG BEACH BLVD., Long Beach. Pool wanted from Long Beach or Del Amo & Susanna vicinity. Phyllis Flink, ext. 2521, HE 7-6791. 15

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

CABIN CRUISER — 18′ McKennacraft, glassed plywood, sleeps 2, 2 30 hp elect. OBS remote controls, elect. bait pump, tank, big wheeled trailer, licensed, $1100. OS 5-5944. A

PIGEONS, rollers, tumblers & homers, $1 to $2 each. FR 9-1778. A

CAMERA, Mamiya 16mm, subminiature w/ filter, shades & closeup lens. $10; CAR RADIO, Motorola, 6 volt, needs work, $10. MODEL SPRAY OUTFIT, motor & compressor & gun, $7.50. GE 1-4233. A

FREEZER, chest-type, 6 cu. ft. capac., new compressor unit & thermostat, $90. FR 1-3830. A

STEREO EQUIPMENT, custom cabinet, 2 FM tuners, stereo preamp, 2 30 watt amplifiers, Viking tape deck, 2 12″ speaker enclosers, $260. FR 6-9723.

HOME, 4 bdrm, Southwood Del Amo, den, sunken liv. rm., fireplace, built-in range, oven, dishwasher, disposal, carpets, drapes, block wall, patio, 1 yr. old, $27,300, $4000 dn. DA 6-5303. A

WHEELCHAIR, Everest & Jennings, adult size, $100. DERAILLEUR, Grand Prix $65. OS 6-3589. A

DINING ROOM SET, mahogany, 8 pcs., 6 chairs, 57″x42″ table, 61″ buffet, $75. OR 7-9498. A

CHIHUAHUA, female, AKC registered, all shots, 1-yr-old, fawn color. $60. Box 1901. A

RADIO EQUIPMENT, Collins 32V3 transmitter, 150 watt, bands 10 through 160, 1 yr. since complete reconditioning, being sold by W4IPQ/6, $325. DA 9-0469.

BEDSTEADS, steel, coil springs, ¾ size & full size. $7.50 ea. DA 4-5961. A

SILHOUETTE TABLE, reducer-type, cost $150, $85. FR 9-2659. A

STEREO TAPE RECORDER, portable, 4 speakers, 2 ext., 2 int., w/record player attach. for recording records, $500. FR 6-4624. A

DOLL CARRIAGE, deluxe, $20; aliderswing set, child's, $5. AX 2-4958. A

KITTENS, Siamese, papers available, $20. OS 5-1842. A

CHEVROLET, 1950, 2-dr., good trans., brakes relined 1 mo. ago, $75. OS 6-1549. A

RADIO, Mercury, 2-transistor, case & earplug, $9. HA 1-2265. A

FOR SALE

ACREAGE, in Joshua Tree, Calif., $340 acre. LA 1-2073. A

CAMPING EQUIPMENT, scout troop tents, cooking & storage kits, back packs, misc. items, 2-wheel trailer w/1961 license, $175. DA 3-4842. A

WASHER, Whirlpool, auto., $20. DA 9-2734. A

FREEZER, 14 cu. ft., upright-type, $150. DA 4-5880. A

GOLF CLUBS, MacGregor, tourney model, 1 & 3 woods, bag, balls & 10 irons, $35. TE 2-9629. A

SHOTGUN, 12-gauge, Winchester pump, w/leather carrying case, $85. OS 5-5800. A

ENCYCLOPEDIA, Britannica Junior. $39. FR 4-6003. A

TYPEWRITER, Royal, elec., Elite type, auto. spacer, underline, dash, magic margins, $195. FA 1-0020. A

PHONOGRAPH, Hi-Fi, Webcor, 3-spd, 3 speakers, blonde console, $40. NE 2-5603. A

RANGE, Tappan, $85; TV, RCA, 21″ console, $95. TE 3-3036. A

CLOCK-RADIO, w/sleep switch, appliance outlet & phono. plug, $15. OR 7-8775. A

PONTIAC, 1954, station wagon, 2-tone green, $195. OS 5-9092. A

DESK, w/chair, 7-dwr, full-size, solid dark mahogany, glass top, $50. DA 7-1605. A

BICYCLES, girls' 26″, black, w/headlight & generator, $35; boy's, 24″, red, $25. OS 5-1415. A

HOUSE, 3-bdrm., split-level-type, 2-mo.-old, 2 baths, lge. rumpus rm., built-ins, $38,500. TE 3-6964. A

ORGAN, Wurlitzer spinet & bench, 13 note base, pedal board, percussion, vibrato, chimes & all other instru. tones, 2 44-note keyboards, maple, cost $1750, $750. OS 6-2880. A

NASH, Ambassador, 1952, r/h, Hydra-matic, good trans., $125. OW 7-8046.

TYPEWRITER, Underwood Noiseless, Standard, $25; baby butler, cost $43, $10. TE 3-4191. A

FREEZER, 11-mo.-old, 14 cu. ft., $325. OS 6-1382. A

TABLES, 3, coffee, step & tier-types, Duncan Phyfe, mahogany, $45. DA 9-9464. A

CABIN CRUISER, 16′, Johnson super outbd., elec. starter, hvy. duty trailer, skiis, plus extras, $1000. FR 4-4843. A

WANTED TO BUY

TRAINING BICYCLE, child's. FR 9-5988.

LAWN EDGER, gas or elec. PL 7-2753.

GUITAR, classical. FR 5-9842. B

FOR TRADE

GOLIATH, 1957, r/h, 33 mpg, excellent condition, need bigger car for growing family. FA 0-2910. C

FREE (to be given away)

DOG HOUSE, very well built. EX 7-4732.

DOG, Springer Spaniel, 7-yr.-old, AKC reg., male, good around children. ME 4-2636. D

RENTALS OFFERED

HOUSES, 1-bdrm, fenced yard, $70 mo.; 2-bdrm., fenced yard, in Hawthorne, $90 mo.; 4-bdrm., furn., 4 short blocks to Northrop, $150 mo. OS 6-1574. E

APT., near stores, schools & buses, $65 mo. DA 6-8823. E

APT., furn., utilities pd., $40. OS 6-6956.

ROOM, in private home, gentleman preferred, $10 wk. OS 9-3868. E

HOUSE, 2 bdrm., unfurn., in Lennox, 1 child O.K., water pd., $75. PL 4-2417.

CHILD CARE WANTED

CHILD CARE WANTED, in my home, 2 children, 3-5 days a week, ref., $5 day. TE 5-9472. H

PERSONALS

PIANIST, to accompany NRC Symphonaires Tues. evenings, 7:30-10 p.m. PERSONNEL ACTIVITIES, ext. 2784. L

FOR SALE OR TRADE

HOUSE TRAILER, 20′, w/attached 16′ semi-permanent cabana, at Ensenada Beach Front Trailer Park, $450 or trade for compact car. FA 8-4366. M

TV TEST EQUIPMENT, oscilloscope, 7″, Cathay Rav. RCA, $100; VT VM, sr. volt ohmvist, RCA, $35; volt ohmmeter, Phastron, $25; tube tester, mutual conductance, EMC, $40; signal generator, precision, $40; more items available, or trade for hi-fi & stereo equipment. FR 9-3139. M

WINTER BOWLING LEAGUES NOW FORMING

Entry forms at PA Extension 2784

NRC Vignette #15

NRC Executive Committee

NRC BRASS—The NRC Executive Committee is the guiding light and oftentimes the direct moving force behind the repeated successes of many Club activities. Composed of elected officers and headed by the Club president, the executive committee meets regularly to perform functions of policy, to review programs, and form agenda for the monthly meetings of officers, commissioners, and representatives. It is their planning and foresight, based on long years of recreation experience that makes the club one of the tops in participation in the aerospace industry today. In photo, committee, newly elected for 1961-62 are from left, D. (Mac) McConnell, sergeant-at-arms; Fred Armstrong, vice-president; Dave Carney, president; May Hawkins, secretary; and Lou Perry, treasurer. Aside from recreation cares, the committee takes an active part in such important Club efforts as the NRC Christmas party, the annual Christmas dance, the annual picnic, and the highly honored doll dressing contest in which all dolls are given to little girls in orphanages. The Executive Committee, as with all good leadership bodies, works quietly but with fine effectiveness and high efficiency.

NRC Surf Fishers to La Costa

John Pawlicki, redoubtable commissioner of NRC Surf Fishing, announces that the Club will hold its Annual Family Meet this coming Saturday, August 19.

The event will take place, 2 a.m. to 10 a.m., at a place at the south end of Carlsbad and immediately north of La Costa Downs State Park.

It will be a little easier than that to find, states John, for NRC signs will be posted along the way.

This promises a refreshing weekend for the entire family.

Camping facilities are tops at La Costa Downs. Overnight trailer facilities are also available.

If you are an oldtime fisherman or if you have never surf fished at all, this outing is still your cup of tea, John declares.

He also asks all those attending to register at Red's Bait Shop, Redondo Beach, and also register at Carlsbad to be eligible for prizes.

NRC T&S SHOOTS AT ANGELUS FOR MERCHANDISE

The NRC Trap and Skeet Club will hold another merchandise shoot Saturday at 12 noon, August 26, it is announced by Bob Bagby, commissioner.

The competition will be held at Rancho Angelus Gun Range, 19141 South Main Street, Gardena.

There will be 50 trap and 50 skeet.

Classes based on previous averages will be AA, A, B, C, and D. New shooters will automatically enter Class B.

Everyone is invited.

HOLE-IN-ONE—Paul Wierk, director, Norair Engineering Administration, enters golfdom's hall of fame. He made a hole-in-one during Twilight League play at Western Avenue. (See Norair News, July 19, 1961.) Ken Clayton, NRC Golf commissioner, left, presents Paul with the coveted NRC hole-in-one golf trophy.

SKINDIVING STARS—Lillian Patton, Photolab, right, with teammate Barbara "Toby" Schreiber, Malibu, won the Pacific Coast Underwater Spearfishing competition held at La Jolla. They are shown during presentation of first and second individual aggregate and perpetual trophies. On August 20, they are to compete in the National Underwater Spearfishing contest at Newport, Rhode Island.

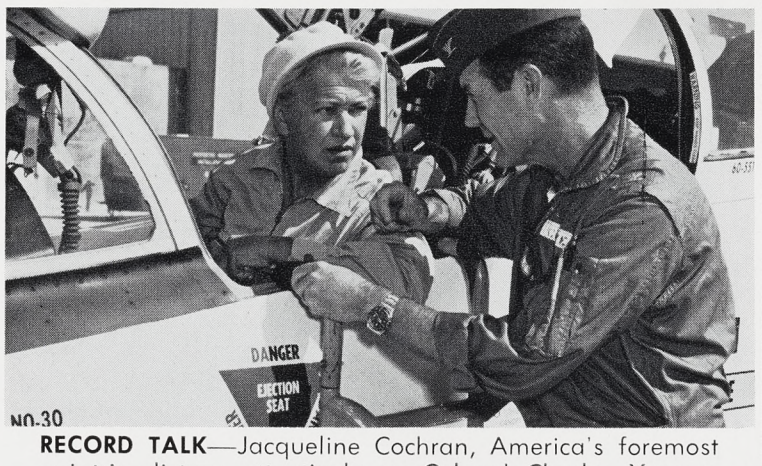
PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, September 13, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

Aerospace Records Are Made to be Broken



RECORD TALK—Jacqueline Cochran, America's foremost aviatrix, listens attentively as Colonel Charles Yeager, USAF, first man to fly supersonic, discusses appearance of range markings over which Miss Cochran will fly.

COCKPIT CHECK—Here, prior to record tries, Miss Cochran meticulously verifies flight gear and cockpit operation as John Alison, Norair vice-president, Marketing, briefs her on fine points of the airplane.

PERFORMANCE—Details and Talon flight techniques are rehearsed with Miss Cochran by Lew Nelson, Norair director, Flight Test. Program, now well under way, is taking place at Edwards.

JACQUELINE COCHRAN SWEEPS ALL RECORDS

Aviatrix Jacqueline Cochran has broken all women's speed records in the world.

Miss Cochran, who already claimed 15 and 500 kilometer records in a Northrop T-38 Talon supersonic trainer, smashed her own seven day old 500 kilometer mark again on Thursday and added a 1000 kilometer record on Friday, unofficial data disclosed.

The blonde aviatrix also holds the 100 kilometer record she set in 1953, but said she plans to "smash that with plenty to spare" in the T-38 in the coming weeks.

Miss Cochran piloted the T-38 at Edwards AFB at 680.855 mph over the 500 kilometer course to break her own record of 659.6 mph set August 25. She then raced 1000 kilometers at an unofficial speed of 640.3924 mph to crack the record of 463.670 mph held since 1955 by Elisabeth Boselli of France.

The new records, clocked by the National Aeronautics Association, will be submitted to the Federation Aeronautique Internationale for certification.

Miss Cochran has received congratulations from the National Aeronautics Association at a board meeting in Westbury, Long Island, New York.

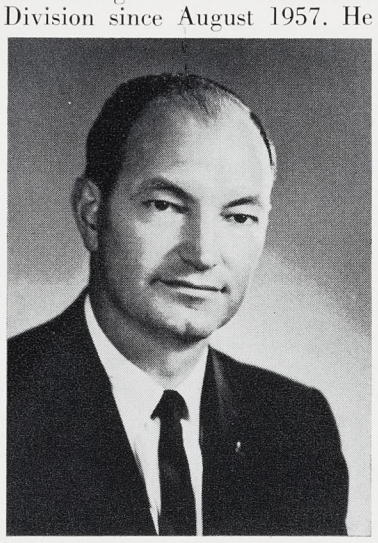
Demonstrating precision flying, Miss Cochran, Friday, flew the Northrop T-38 along the narrow 1000 kilometer course (621.37 miles) to a point northeast of Yuma, Arizona, and back to Ed-

(Continued on Page 3)

Dr. Ballhaus Appointed Executive Vice-president

Dr. William F. Ballhaus has been named executive vice-president of Northrop Corporation, it has been announced by Thomas V. Jones, president.

Dr. Ballhaus has been a vice-president of Northrop and general manager of the Nortronics Division since August 1957. He



DR. WM. F. BALLHAUS

also is a member of the board of directors of Page Communications Engineers, Inc., wholly-owned Northrop subsidiary.

Mr. Jones also announced the appointment of Frederick Stevens as a corporate vice-president. He will succeed Dr. Ballhaus as general manager of the Nortronics Division. Mr. Stevens has been vice-president and manager of Nortronics' Electronic Systems and Equipment Department, newly headquartered at Research Park, Palos Verdes Estates.

Dr. Ballhaus joined Northrop in 1953. Previously, he was chief of preliminary design for Convair, Fort Worth, and was an engineering executive with Douglas Aircraft Company, El Segundo. A native of San Francisco, he received his A. B. degree from Stanford University in 1940 and his M. E. from Stanford in 1942. He received his Ph.D. degree in mathematics from the California Institute of Technology in 1947.

Mr. Stevens is an authority in the field of inertial guidance and military electronics and is one of the Northrop scientists credited with invention of the nation's first successful intercontinental missile guidance system. Mr. Stevens joined Northrop in 1947 and was appointed manager of the Electronic Systems and Equipment Department in 1957. He was named a vice-president of Nortronics in 1959. He holds a bachelor of science degree from Whitman College and a master of science degree from the California Institute of Technology.

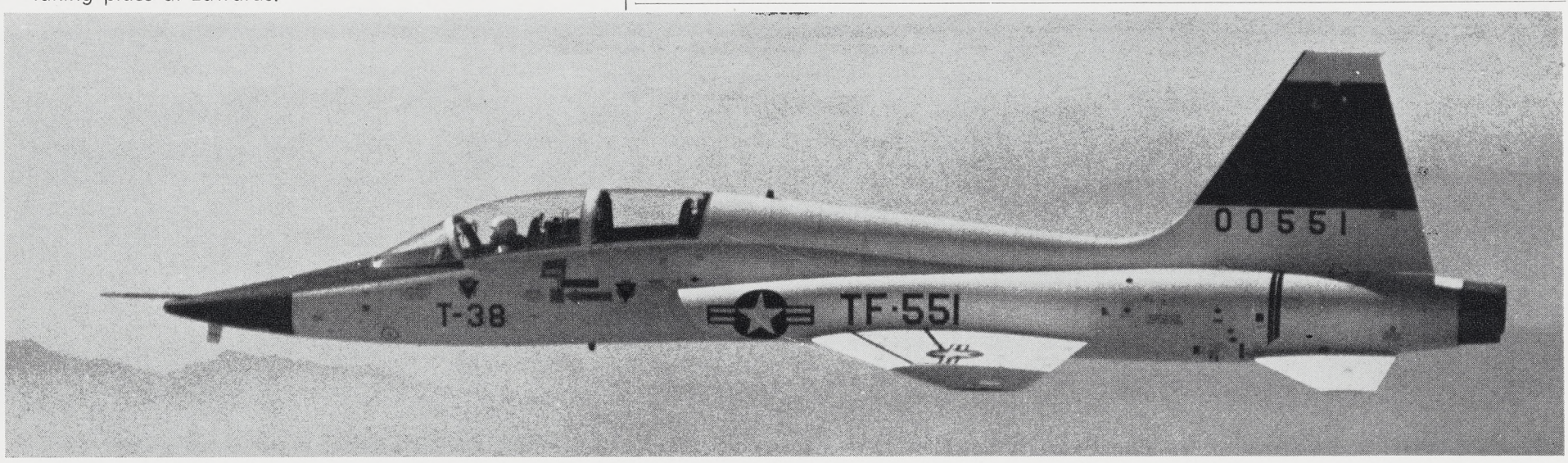
Jones Named To SRI Board Of Directors

Thomas V. Jones, president and chief executive officer, Northrop Corporation, has accepted membership on the board of directors of Stanford Research Institute, it has been announced by J. E. Wallace Sterling, president of Stanford University and chairman of the SRI board of directors.

An engineer by training, Mr. Jones was graduated with great distinction from Stanford University in 1942.

Mr. Jones is a member of the Committee for Economic Development and of the board of directors of the California State Chamber of Commerce. He is also a trustee of the California Institute of Technology. In addition, he is active in a large number of civic and professional organizations.

As a member of the SRI board of directors, Mr. Jones joins a group of 40 leaders in business, industry, and academic life who provide policy direction and guidance for the nonprofit research organization.



ANOTHER RECORD SMASHED—Jacqueline Cochran brings the Talon in over the field for an easy landing after one of her successful record flights. On her first try, "Jackie" set a new speed record for women over the 15 kilometer course of 844.2 miles per hour. Record was previously held by Mme. Auriol of France with 715.97 which was established in 1955. Miss Cochran began flying in 1932.

Dr. Sheblak To Head Norair Personnel Development Work

Dr. Vernon B. Sheblak has been appointed chief, Norair Personnel and Management Development group, it has been announced by John B. Clark, director, Industrial Relations.

Dr. Sheblak who comes to the Division with an extensive background in education and personnel development work, received his bachelor of arts degree in political science at UCLA in 1927. He has continued his studies throughout his career receiving his bachelor in law from Metropolitan Law School, Los Angeles in 1932, his masters in education from Claremont Graduate School in 1948, and his doctorate of education from the University of Southern California in 1953.

Dr. Sheblak's appointment signals the expansion of the Division's Personnel and Management Development program which seeks to achieve the highest knowledge standards in the sciences, technologies and administrative pursuits required by modern American industry.

Mr. Clark also announced that Clarence Z. Stine has been promoted to general supervisor and will continue to supervise the Industrial and Technical Training branch.

Dr. Sheblak has held numerous positions of key responsibility in industry.

Since 1955 and prior to coming to Norair Division, he served as training coordinator, Pacific Finance Corporation.

During the forties and early fifties and with time out for a three-year tour in the Air Force, he was successively coordinator of Distributive Education and vice-principal, San Diego Vocational Junior College; special supervisor of the Bureau of Business Education, California State Department of Education; and consultant for adult education, Fresno County Schools. In the Air Force he served as first lieutenant and in the duties of training officer, defense counsel, public relations officer, and procurement officer.

Dr. Sheblak has been very active in institute and professional society membership work. He is now president of the American Society of Training Directors, a national organization of 70 chapters and 3500 training directors. He is also a member of the State Bar of California.

DR. VERNON B. SHEBLAK

Dr. Sheblak has teaching experience at Claremont Graduate School, University of California, and Colorado State University.

He has published several books on training, his most recent being "Financing Adult Education" issued by California Journal of Education Research.

Launcher Contract to Nortronics

Northrop Corporation's Nortronics Division has been awarded contracts for penetration rocket launchers to be used on B-52H global ballistic missile bombers of the Air Force's Strategic Air Command.

Nortronics will design, develop and produce the forward firing rocket launchers and associated electronic controls at its Anaheim, California, facilities.

With this award by the Boeing Company, prime contractor for the B-52's, Nortronics becomes a major partner in the production of the nation's first and only ballistic missile launching bomber.

JOHN BOSCON RETIRES—John Boscon, Air Force Quality Control career man of 28 years, the past 16 of which were spent at Norair, is extended best wishes and good fishing on occasion of his retirement. Shown presenting "Johnny", seated left, with a many autograph-signatured photo of the Talon are from left, Harry Kline, senior liaison engineer; Harry Parker, assistant T-38 project engineer; E. V. Chandlee, chief, Liaison Engineering; W. E. Woolwine, director, Project Management (seated); Arthur Webb, supervisor, Subcontract Liaison; and T. S. Julian, senior liaison engineer.

New Northrop Magazine on Technologies

Newest Northrop publication to join forces with other Company media is the "Northrop Technical Digest".

Volume 1, Number 1, bearing dateline of September, has just been released to science and aerospace writers and editors and interested personnel in government, military, industry, and educational fields.

"Northrop Technical Digest," states Norman Warren, Corporate director of Public Relations and Advertising, "will disseminate useful and interesting information inside the company as well as outside. The publication will present newsworthy aspects of the Northrop Technological achievements to the broadest possible audience relevant to our Company goals."

The Northrop Technical Digest is edited by John Chapman of the Corporate Public Relations office. It is an offset publication, 8½ by 11 inches in size. First issue is 12 pages. The cover depicts a typical spot diagram—a computer's-eye view of ballistic camera image, used to aid lens design.

BILTMORE BOWL TO BE SCENE OF M-C NIGHT OUT

The evening of October 7 is the date to be circled on Northrop supervisions' calendar, it is announced by Ed Nolan, Management Club president.

On that evening, the Club will hold its annual dinner dance at the Biltmore Bowl which has been redecorated and reglamourized until it bids to become "the" place to go in the Los Angeles area.

"The affair is semi-formal," states Mr. Nolan. "Manny Harmon will provide the entertainment. Dinner service, a special creation of delectables by the Biltmore maitre d' will take place at 8:30 p.m."

September 18 has been established as the deadline for ticket reservations for members wishing to set up a table and the Management Club board of control reminds that one pair of tickets will hold a table seating four couples.

ARMY CHANGING ITS AIRCRAFT DESIGNATIONS

The Army has been changing designation of its aircraft from the Air Force system to one that indicates functions as older Air Force - designated aircraft are phased out and the newer craft become operational, it has been revealed in the August issue of Army Research and Development magazine.

In the Army system Y means prototype, A means a fixed wing aircraft, H means helicopter, U means utility, O means observation, C means cargo, and SD means surveillance drone. Numbers indicate different models of the prototype, and the last letters refer to the manufacturer.

YAC-1DH, for example, stands for a prototype of a fixed wing cargo aircraft, model number one, built by De Havilland.

On Northrop Tour

ARNOLD AIR SOCIETY (AFA)—On a two-week orientation tour of Northrop facilities, Arnold Air Society (AFA) cadets call on Company President Thomas V. Jones for briefing on our military-industry teamwork concept. From left, Michael Mulligan, Oregon State College; David Brungart, Union College, Schenectady, New York; Mr. Jones; Colonel Louis Ciccoli, executive secretary, Arnold Air Society; and Richard Schulte, South Dakota State College. Arnold Air Society has a membership of 5500 cadets. Men were chosen as top AFROTC representatives from 176 major U.S. colleges and universities. They visited all divisions to study firsthand administrative, engineering, and manufacturing techniques.

NEW NRC PREXY—Dave Carney, Norair Transportation, is welcomed as incoming NRC Norair president by outgoing prexy Ron Wiggins during gavel exchange at NRC Clubhouse. Dave took up the reins effective August 1. His campaign promise for 1961-1962 is "the best in recreation programs for the best workers in aerospace."

Major C. W. Clark, AFPR Promoted to Lt. Colonel

Major Charles W. Clark, Northrop Air Force Plant representative, has been promoted to the rank of lieutenant colonel, it has been announced by Headquarters USAF.

Colonel Clark was first assigned to Northrop April 19 of this year. The News advised at that time that his lieutenant colonelcy was expected.

In addition to his normal plant representative duties, Colonel Clark participates in the Talon program at Palmdale, flying Air Force acceptance flights on production airplanes before they are delivered to the Air Training Command.

Other Air Force acceptance pilots in the AFPR office who fly in the Talon acceptance program include Major Jim Anthony, Northrop deputy AFPR and T-38 project officer; Captain Evert Seath, Air Force Quality Control officer; and First Lieutenant Earl E. Hallum, Air Force comptroller.

LT. COLONEL CLARK

Northrop-Norair News

VOL. 19 No. 20

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A NORTHROP CORPORATION PUBLICATION
Published every other Wednesday
NORAIR DIVISION

CHARLES BRADFORD, Editor

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PLANT PROTECTION MEN TO DON NEW BLUE UNIFORMS NEXT MONDAY

Plant Protection personnel are scheduled to don new uniforms next Monday, it has been announced by Paul Crews, Norair director, Security and Protection Services.

Symbolic of a new approach to Plant Protection operations, the change will mark a number of firsts in the aerospace industry. The likes, dislikes and comfort of the men have gone into the design. The uniforms signal a break with long-standing tradition on what police and fire personnel should wear. They are also the first major change in Plant Protection uniforms at Norair since Company founding.

By Aerospace Reporter

In commenting, Mr. Crews stated, "The aerospace environment of today creates a more diversified and complex responsibility for the Plant Protection force. Current and future trends in Division programs, facilities and equipment have made it necessary that we adjust Plant Protection programs and organization to match the Company's course of development.

"Where in former years, the guard or fireman was a specialist, we now are creating a multi-purpose organization manned by multiqualified Plant Protection officers.

"Every man is qualified and trained in the advanced nature of Norair's activities. Whether it be the handling of emergencies, the proper care in patroling plant areas, performing fire prevention surveys, or coordinating and supporting other agencies in emergency work, Norair Plant Protection supervisors and officers can act fast, do the right thing, make the proper decision."

The uniforms for the officers consist of California-weight blue shirt and trousers, black leather accoutrements with a change from the traditional hip-swung holster to a waist positioned cross-draw holster. For cool weather and night duty, there will be an Eisenhower-styled jacket. Cap and jacket badges will be silver with Northrop blue, utilizing the Northrop emblem. Also, each man will wear a silver and blue nameplate.

Uniform of supervisory personnel will be essentially the same as that of the officers with the exception of a white shirt and a uniform coat in place of the Eisenhower jacket.

A continuous program of upgrading in Plant Protection forces has been under way at Norair for the past two years. Aside from stressing proficiency in correct protection of aerospace activities, great emphasis is being placed on a rounded support program whereby the group extends firm and knowledgeable assistance to Norair's service elements such as Maintenance, Medical, communications, and Safety. The Plant Protection group also maintains close coordination with local city fire and police operations and can request assistance in a matter of seconds when necessary.

Nerve center of Norair Plant Protection forces is now located in the Transportation Building where a modern and flexible Plant Protection Control Center is in operation on a 24-hour basis, every day in the year.

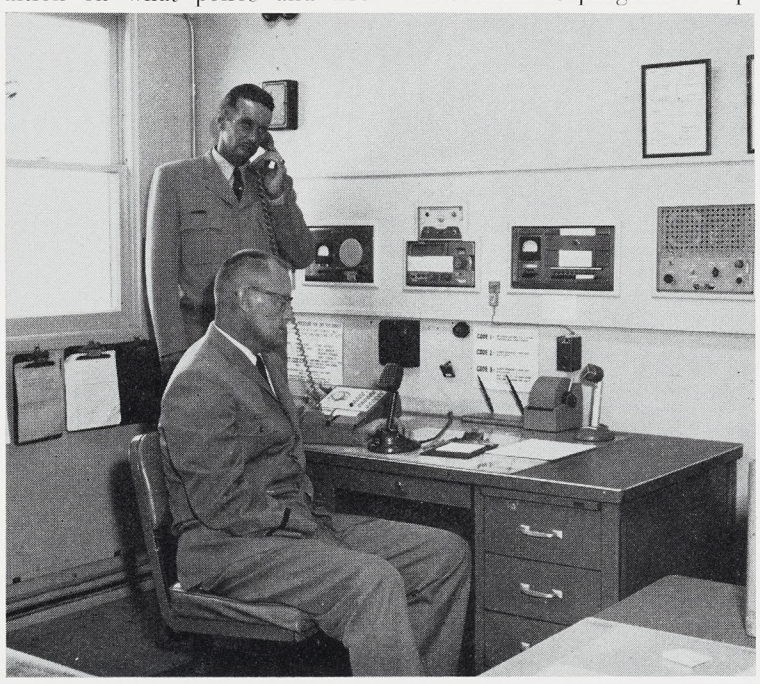
Here, banks of transmitting and receiving instruments link the Center with the entire plant and with all major Southland cities. The systems include, the vital 2211 emergency lines, radio control of emergency vehicles, standby radio control of all Norair vehicles, the plant public address system, Connelrad Warning System, Civil Defense Warning System, and several automatic fire and emergency alarm systems. Two uniformed Plant Protection supervisors are on duty around the clock, one of whom is always stationed at the Control Center.

In addition to communications facilities, the Control Center maintains concise, quickly available records of the major equipment and activities by plant area so that proper action can be taken in the event of an emergency. The most important single function of the Control Center is to receive emergency calls initiate the necessary action, and provide whatever support, coordination or control measures are needed by all agencies, both Company and public, that must respond rapidly at the onset of any emergency.

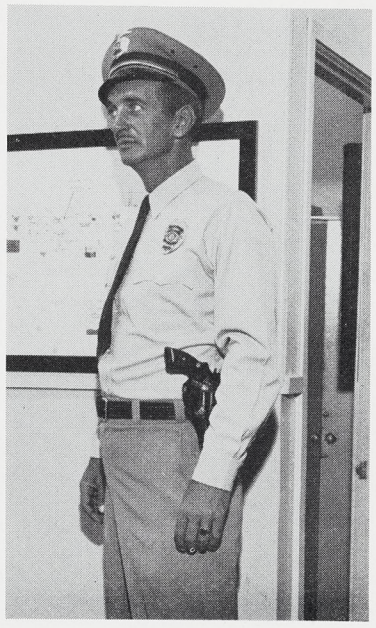
In addition, and to achieve the maximum in centralization of facilities, the fire station now located on the edge of the field, near the paint hangar, is due to be moved to the subassembly (garage) building in the near future.

Beyond the Transportation Building is Norair's underground Disaster Command Post located deep under the cafeteria where operations could be carried on in all but a complete holocaust. The equipment used in the Control Center is duplicated here, and in addition there are radio receivers tuned to police and Civil Defense frequencies in the Los Angeles Basin and two-way radio communications linked to the Los Angeles Sheriff's Department amateur net.

The Disaster Command Post, now in final stages of installation and checkout, has been established to facilitate control of the plant and communication with outside agencies in the event of a major Civil Defense emergency. Other preliminary steps are being taken in anticipation of possible changes in the Civil Defense Program at both national and local levels.



NEW UNIFORMS—CONTROL CENTER. Norair Plant Protection men, Officer Vernon Newcomer, standing, and General Supervisor Edward Griefnow, model new uniforms to become regulation next Monday, September 18. Color is blue, California-weight. Coat is supervisory wear. Eisenhower jackets are for officers. Insignia is silver with Northrop blue. Control Center is manned 24 hours a day, provides communications link with all plants and areas, all Company vehicles, all police, sheriff's, and fire departments throughout the Southland. This Center, and its counterpart deep under the cafeteria, would be nerve center in dire emergencies including nuclear attacks.



CHANGE—Change is made from traditional hip-swung holster to modern cross-draw. Side arms are now Division issue. Officer Newcomer stands in front of facilities map which is keyed for quick reference and pinpoint location.

Old Fashion FAMILY PICNIC

Sunday, October 22

Watch For Fun Details
Something New!

Big Smile of Approval

TALON FLIGHTS—Company officials try Talon wings. Here Corporate Vice-president and Norair General Manager Dick Nolan signals top approval of the T-38 after Edwards flight with Lew Nelson, director, Flight Test. Other officials who have recently flown include Richard E. Horner, Corporate senior vice-president; Richard W. Millar, Northrop Corporation member of the board; James Allen, assistant to the president of the Corporation; P. W. Timberlake, Northrop-International Corporate vice-president; John Alison, Norair vice-president, Marketing; and Brigadier General M. A. Severson, USMC (Rtd.), staff assistant, Nortronics Applications Engineering.

RAPID CITY POLIO CLINIC—A Norair Division sponsored polio clinic was held at the Rapid City Medical Center. First of a series, the clinics will provide opportunity for Norair personnel and their families to obtain inoculations at cost—$1 a person—maximum $5 a family. Here little Deborah Lou Sveum, daughter of Wesley Sveum, field liaison engineer at T-2 gets her shot. Her dress is typical South Dakotan. A brave little girl, Deborah Lou.

Jacqueline Cochran

(Continued from Page 1)

wards Air Force Base. The record run took 58 minutes, 22.05 seconds.

The T-38 Talon, called "the greatest step forward in the history of pilot training" by Miss Cochran, was accepted by the Air Force Air Training Command for its pilot training program last March. It is the Air Force's first supersonic jet training aircraft.

The Talon's rate of climb is 30,000 feet a minute at sea level, and it can maintain supersonic speed in level flight from sea level to 50,000 feet. Maximum top speed is in excess of Mach 1.2 or more than 800 mph.

Although the T-38s are being built for the Air Force, Miss Cochran's flights are being made in a Company T-38.

Miss Cochran's success last week added lustre to a record-studded flying career that began nearly 30 years ago. Today she holds many of the world's air speed records in the men's category for reciprocating engines and more than 200 trophies.

RIDES WANTED

7 a.m. — 3:45 p.m.

PACIFIC COAST HWY & PROSPECT, Redondo Beach. Helen C. Clark, ext. 1912, FR 8-2587. 2

LINCOLN BLVD. & PICO BLVD., Santa Monica. R. C. Evrist, ext. 2301. EX 2-3456. 2

VERMONT OR WESTERN & W. 228, Torrance. Fred Trujillo, ext. 1573, FA 8-5086. 2

7:30 a.m. — 4:15 p.m.

10TH & MAGNOLIA, Long Beach. Gail Stroh, ext. 425, GA 4-4891. 3

KATELLA & BROOKHURST, Garden Grove. Charles J. Rose, ext. 1305, LE 9-3555. 3

8 a.m. — 4:45 p.m.

LENNOX BLVD. & FREEMAN AVE. or FREEMAN AVE. & 111th ST., Lennox. Gloria Adams, ext. 2586. 5

WESTMINSTER & SPRINGDALE, Huntington Beach. F. T. White, ext. 2123. 5

EUCLID & KATELLA, Garden Grove. Warren H. Fisher, ext. 2501. JE 4-2401. 5

SOUTH ST. & ATLANTIC AVE., Long Beach. Robert Burner, ext. 2629, GA 2-5152. 5

ANZA & CALLE MAYOR, Torrance. C. M. Garcia, ext. 1401, FR 8-6547. 5

RIDES OFFERED

7 a.m. — 3:45 p.m.

LINCOLN BLVD. & PICO BLVD., Santa Monica. R. C. Evrist, ext. 2301. EX 2-3456. 12

VERMONT OR WESTERN & W. 228, Torrance. Fred Trujillo, ext. 1573, FA 8-5086. 12

7:30 a.m. — 4:15 p.m.

KATELLA & BROOKHURST, Garden Grove. Charles J. Rose, ext. 1305, LE 9-3555. 13

ANZA & TORRANCE BLVD., Torrance. Mary Ann Cochrum, ext. 1446. 13

8 a.m. — 4:45 p.m.

EUCLID & KATELLA, Garden Grove. Warren H. Fisher, ext. 2501. JE 4-2401. 15

SOUTH ST. & ATLANTIC AVE., Long Beach. Robert Burner, ext. 2629, GA 2-5152. 15

ANZA & CALLE MAYOR, Torrance. C. M. Garcia, ext. 1401, FR 8-6547.

MANCHESTER AVE. & 82nd ST., Inglewood. Can pick up anywhere on Crenshaw south of 82nd Street. Charlotte Woolums, ext. 2151, PL 3-7484. 15

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

AQUARIUM TANK, 19 gal, comp. w/enc. cabinet, 42"x36", $45. OL 7-2364. A

HI-FI, blonde, Magnavox, 4-spd., $85. TO 6-0064. A

WOOFER, 15", 16 ohm, 25 w., w/Universal crossover, $25. TE 1-5158. A

DODGE, 1955, 4-dr., auto. trans., p/stra., $575. OR 4-0201. A

RANGE, GE, $35; washer, auto., GE, $25. DA 9-9664. A

TRAILER, hvy-duty, box-type, 4'x8', w/4' high sides, new 6-ply tires, '61 license, $50. DA 3-7781. A

PIANO, baby grand, black ebony, $400. TO 1-6404. A

REFRIGERATOR, Crosley Shelvador, 8 cu. ft., light pink, $45. DA 3-6848. A

RECORD CABINET, mahogany, $10; step stool, yellow, kitchen, $4; doll bunk beds, $3; bassinett, $4; building blocks, 140 concrete-type, 5¢ ea. OR 4-1825.

MERCURY, Montclair, 1956, h/top, auto. trans., $425. OR 0-2014. A

FORD, 1956, V-8, 2-dr., stick, r/h, new paint & tires, $695. FR 7-1807. A

BEDSTEAD, maple, single, chest of drawers, nite stand, $40. HA 9-2764. A

CAMERA, German, 120, flash gun & case, $30. FR 1-5816. A

HOUSEHOLD FURNISHINGS, breakfast nook, gray, $35; braided rug, multicolored, 11'x15', 9-mo.-old, $100; couch, green, w/bolsters, $24. FA 8-0450. A

ACCORDION, Acmette, 120-bass, w/case, $100. Box 2001. A

FOR SALE

BOAT, 18'. 8' beam, Fiberglassed, trailer, 30 hp Evinrude elec., fuel tank & controls, $800; movie projector, Keystone 16 mm, & splicer, Belmont K161, $65. PL 4-5288. A

ACREAGE, Green Acres tract, 6 acres, Hwy 74 bet. Homeland & Hemet, plenty of water avail., cemented well on property, $12,000. PL 4-8142. A

CAMERA, Polaroid, Model J66, elec. eye, bcilt-in flash, $80. Box 2002. A

ERECTOR SET, size 7½, $4. FR 2-8019.

BICYCLE, 20", girl's, $17; Hollywood bed, spring, mattress & frame, $30. SP 2-1902. A

B.S.A., CYCLE, 1957, 150 c c, $300. LO 9-9846. A

BABY FURNITURE, bed, $5; buggy w/pad, $8; jump seat, $3; 3 maternity suits & 1 skirt, size 18, $3. FR 5-4574. A

GUNS, Winchester, Model 70, 300 cal. H&H Magnum, w/leather sling, $100; automatic, .22 cal., made in France, w/leather holster, $35. FR 5-8278. A

HOUSE, 3-bdrm, newly decorated, large fenced yard, near school & shopping center in Garden Grove, $12,500. DA 3-5900. A

HOUSE, 3-bdrm, 2-bath, 16x28 beam ceiling living rm., fireplace, built-ins, heated pool, covered patio, coastline & L.A. view, $33,900. FR 5-8847. A

REDUCING MACHINE, w/timer, cost $150, $50. OS 2-5443. A

PIANO, upright, $100. DA 7-9084. A

WASHER, Kenmore auto., $10; headboard, maple, double-bed size, bookcase type, $5. OS 5-1347. A

PONTIAC, 1950, 4-dr., Hydramatic, $75; motorcycle, 1957, Areol, 500 c c, single cyl., $350. DA 9-2889. A

TENT, 9'x9' base, 1-yr-old, $25. FR 5-8536. A

RUG, 9'x15'6", Berven Mills early California broadloom, reversible multicolored wool w/pad, $35. PL 5-8417. A

CABIN CRUISER, 1955, Ladd, 22', 115 hp Chrysler Crown, ship/shore, elec. bait tank, fresh water tank & pump, Fiberglas op/lywood $2300. OS 9-1698. A

OUTBOARD ENG., 1961, 3.6 hp, $80; power mower, $40; dining room set, solid walnut, extends to 11' w/6 chairs, buffet & china, $400. TE 1-4586. A

TABLES, 3, coffee, step & tier-type, Duncan Phyfe style, mahogany finish, $45; cemetery lots, 3 double-size, El Portal section, Inglewood Park, $450 ea. or $1250 for all. DA 9-9464. A

PLYMOUTH, Savoy, 1954, 2-dr., $250. VE 8-4734. A

CHAIN HOIST, new Yale spur geared, ½ ton w/overhead dolly, $125. PL 5-4497. A

CAMPER, Carrie, all steel camping trailer, sleeps 4, 50 lb. icebox, $250. FR 2-1375. A

AUTOS, Dodge 6 Pickup, 1957, $850; MG TD Roadster, 1952, $600. GA 4-6383. A

DINETTE SET, wrought iron, w/4 chairs, & 11" leaf, can be used in dining room or kitchen, $40. DA 5-4794. A

WHEELCHAIR, $50. DA 9-5364. A

HOUSE, split level-type, in Palos Verdes Hills, w/ocean view, 2-mo-old, 3-bdrm, large rumpus room, 2 baths, 2 fireplaces, carpeting & drapes, professionally landscaped, sprinkler front & rear, built-ins, $38,500. TE 3-6964. A

TRAIN SET, American Flier, 2-rail, "S" gauge, 73"x49", engines, 2 streamline, 6 cars w/caboose, w/transformer, horn, uncoupler, log unloader, mounted on wood, $25; bicycle, AMF Roadmaster, 26", med. wght., battery-pwrd. headlite, $25. OR 7-2555. A

FORD, Victoria, V8, 1954, Fordomatic, r/h, ring recently installed, $399. PL 7-7283. A

BICYCLE, girl's 26", 3-spd., w/headlite & generator, $30. OS 5-1415. A

LABRADOR RETRIEVER, AKC reg., training started, $50. OS 9-4194. A

WANTED TO BUY

PUPS, Beagle or Dachshund, DA 3-7398.

ACCORDION, 12 bass. PL 5-6655. B

RENTALS OFFERED

HOUSE, 2-bdrm, near Northrop, covered patio, furn., carpeted, water pd., $130 mo. PL 5-4580. E

DUPLEX, 2-bdrm, unfurn., carpets, drapes, built-ins, private patio, $150. FR 5-5731. E

PERSONALS

THANK YOU for the lovely flowers & expressions of sympathy extended to me & my family during the recent loss of my mother. LOUISE L. HUDSON. L

GIRL, 24-30, to share 2-bdrm. home. FR 3-1565. L

SURFBOARDS, repaired & pigmented, FR 5-6095. L

FOR SALE OR TRADE

SURFBOARD, $60, or trade for Derailleur bicycle. EX 7-4732. M

PAINT SPRAY OUTFIT, twin-piston, w/tank, hose, gun & wheels, $60 or trade for bandsaw. FR 8-3990. M

SMALL CABIN & 5 acres, about 10 miles north of Wrightwood, $1800 or will trade for late model cab-over camper & truck. DA 4-7623. M

NRC Golfers Plan Tourney At El Cajon

Times wait for no one—not even golfers.

The NRC Golf Club, Ken Clayton, commissioner, announces a 36-hole golf tournament at Singing Hills in El Cajon for November 4 and 5.

Reservation deadline is set for September 22. Entry costs which are $8 green fees, $1 prize fund, are payable with the room reservation deposit, states Ken. Acceptions will be on first come basis starting today, September 13.

Deluxe accommodations at the club are from $15 for a single to a triple suite deluxe — big enough for three couples—at $30 to $40. Double twin is $18. There is no extra charge for children. Swimming pool and television are part of the package.

A check out time of 2:30 p.m. does not necessarily apply to golfing guests.

Describing Singing Hills Golf Course, Ken waxes enthusiastic, if not aesthetic, "It is truly a golfers paradise in a hidden sheltered valley," says he. "It is lavishly endowed by nature. The year around climate and golfing conditions approach perfection."

There will be special merchandise prizes for the winners.

Gem & Mineral Club To Try Luck Near Big Bear

The NRC Gem and Mineral Club, Bill Puniwai, commissioner, announces that the membership will board their campers and caravan to Holcomb Valley on September 23 for a weekend of rock hounding.

Holcomb Valley is located four and one-half miles north of Big Bear Village or about one mile from Hitchcock Ranch.

Accommodations at the camp include tables, stoves, fire rings, but no water. G & Mers should bring their own firewood.

The search this time will center on aragonite which is reported to be found in this area in massive form with good banding. Radiating specimens are also found. Aragonite can be converted into excellent bookends, spheres and other whatnot uses.

Rock hounding equipment usually required would be a rock hammer, small shovel, a pick, medium-size sledge, and gads or wedges.

For specifics and information, call Personnel Activities.

TEX STATLEY'S NRC RIDERS TO MEET AT T&L STABLES SUNDAY

The Riding Club's September ride scheduled for the 17th, next Sunday, will take place at T & L Stables, 2642 River Avenue, it is announced by Tex Statley, commissioner.

Tex says the best way to reach T & L is via San Bernardino Freeway to Walnut Grove exit, south on Walnut Grove to Garvey, left on Garvey to River Avenue and turn right. T & L Stables are near end of River Avenue.

Reservations can be made at Personnel Activities with deadline pegged for September 14, tomorrow.

Cost is $1 an hour for the horses.

In addition, Tex announces the current monthly meeting to be held September 24, 4 p.m. at Chuck Wheeler's home, 1743 West 127 Street, will serve as annual election of officers for the Riding Club.

Chuck intends to show home movies of past parades in which the Riding Club has won trophies.

All Norcrafters Belong Says Dave Carney, NRC President

By Dave Carney

Dave Carney, longtime Norcrafter, was elected president of the Northrop Recreation Club last month. His first message on how to participate in the Club contains matters of interest to all personnel and their families.

All Northrop people automatically become members of the Northrop Recreation Club on their first day of employment.

In addition, members of new Norcrafters' immediate family become associate members of the Club.

There are no membership dues connected in association with the Club or activity you may choose.

Under the structure of the Northrop Recreation Club we have many activities, one or more of which you may find of personal interest and pleasure. The roster includes everything from art to weightlifting. Such interesting diversions count bowling, swimming, golf, ping pong, fishing, riding, tennis, radio, model railroad, travel, camping, and many others. Activities are listed on bulletin boards, your NRC Good Time Table, and published in the Norair News. In addition to the purely sports activities, many cultural, educational and social contacts are also available including Organ Club, Toastmasters, Mixed Chorus.

If you are the husband or wife of a Norcrafter and you are interested in a specific activity, ask that they contact the Personnel Activities office and the staff will be most happy to make arrangements to have your name included on a club or activity roster.

The strength of the Northrop Recreation Club lies in the enthusiasm and participation of its members. May we suggest that you join with us in obtaining your share of the benefits of this splendid organization.

NRC Good Time Table for September

For enrollment or information on activities listed below, call or contact Personnel Activities, Plant One, extension 2784. All clubs meet at the NRC Clubhouse unless otherwise noted.

ART CLUB, Stewart Luce
Meets Thursdays, 7-10 p.m., at Joe Kalina's Studio, 3234 W. 157th St., Gardena. Elections scheduled Sept. 28.

BALLROOM DANCE CLASS, Wes Williams
Two classes 7-8:30 p.m. and 8:30-10 p.m., every Thursday. Newcomers welcome to visit and enroll.

BASKETBALL, Bill Greene
Start forming team now. Leuzinger gym available in October.

BIBLE STUDY, C. J. McGuire
Plant 1—Daily, 11:30-12:15, Tool Design Bldg. 11-11:45, 5566 Conference Room. Plant II—Mondays and Thursdays, 12-12:45, Conference Room 2. Engineering Center—Daily 12-12:45, Reliability Conference Room.

BOAT CLUB, Sandy Friedfeld

BOWLING, Earl Saunders
Winter Leagues forming. Obtain entry forms at P.A. Winter Leagues commenced rolling the week of Sept. 10.

BOY SCOUTS, Bill Wareing
Sea Scouts meet Tuesdays, 7:30 p.m., at Naval Reserve Center in Hawthorne. Cub Scouts meet 4th Friday, 7:30 p.m. Boy Scouts meet Thursdays, 7:30 p.m. at Ramona School in Hawthorne.

CAMERA CLUB (days), Howard Butler
Election meeting Sept. 20, 7:30 p.m.

CAMPING CLUB, Fred Armstrong
Meets 1st Wednesday.

CHESS CLUB, Loy Bennett
Noontime activity.

FISHING CLUB, Harold Rapella
Charter boat, "New Longfin". Sept. 23, $12.

GEM AND MINERAL CLUB (days), Bill Puniwai
Meets 2nd Wednesday, 8 p.m. for election and program. Holcomb Valley field trip, Sept. 23, 24.

GEM AND MINERAL CLUB (nights), Doyle Shook
Meets 1st Wednesday, 1 p.m. at 12828 Doty, Hawthorne.

GOLF, Ken Clayton
Singing Hills, El Cajon, Nov. 4 and 5. Cost $9.

MIXED CHORUS, Ron Henderson
Meets Sept. 19 and 26. Elections scheduled Sept. 19.

MODEL RAILROAD, Jack Wilson
Meets Thursdays, 7-10 p.m. Visitors welcome.

RADIO CLUB, Paul Serafin
Meets last Thursday, 7:30 p.m. Radio code class meets Tuesdays, Wednesdays, Thursdays, 7:30 p.m.
NRC's station is W6VPZ.

RIDING CLUB, Tex Statley
Trail ride Sept. 17, 4 p.m. at T & L Stables, 2642 River Ave., South San Gabriel. Horses $1 an hour. Election meeting Sept. 24, 4 p.m. at C. Wheeler, 1743 W. 127 St., L.A.

SKEET CLUB, Bob Bagby
To resume shooting January 1962.

SKIN DIVING, Ralph Gonzales
Meets 3rd Monday for elections at 7:30 p.m.

SOFTBALL, Mac McConnell
League playoffs—Lennox Park, Wednesdays.

SPORTS CAR CLUB, Lou Perry
Meets 2nd Monday, 7:30 p.m. for elections, movies and announcements. Slalom at parking lot F, Sunday, Sept. 17, at 10 a.m.

SQUARE DANCING, Dick Rinehart
Dance 1st and 3rd Fridays, 8-11 p.m., Ralph Hill's Hall, 15701 Crenshaw Blvd., Gardena.

SURF FISHING, John Pawlicki
Meets 1st Tuesday, 7:30 p.m. Field trip Saturday, Sept. 23, 6-10 a.m., at Seal Beach.

TENNIS, John Potts
Free instruction and ladder matches, Saturdays, 10 a.m., at El Camino Jr. College. Industrial league tourney late in September.

TOASTMASTERS 212
Meet at Cockatoo Inn, Thursdays, 6:30 p.m.

TRAVEL CLUB, Howard Cornelius
Meets Friday, Sept. 15, 7:30 p.m.

FOR THE LADIES

BOWLING, Corinne Davis
Winter Leagues forming. Obtain entry forms at P.A. Winter Leagues commenced rolling the week of September 10.

GIRL SCOUTS
Mariners, Tuesdays, 7 p.m., Naval Reserve Center, 201 West 126th Street, Hawthorne. Ages 13-18. All Norcrafter girls welcome.

KNITTING, Vera de Villers
Meets Thursdays, 7:30 p.m., at 6447 W. 87th St., Los Angeles 45 (Westchester). Free instruction each meeting.

SPECIAL FAMILY EVENTS

HARBOR CRUISE — Enjoy a two-hour cruise of Los Angeles Ports, Sunday, September 24, 1961. Boat leaves Pier Point Landing, Long Beach, at 2:30 p.m. Cost: Adults only $1.25. Children free, courtesy of NRC. Make reservations at Personnel Activities. Deadline September 15.

GALA COMPANY PICNIC—Sunday, October 22, at South Gate Park. Fun, games, and surprises! Watch for details.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, September 27, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

Miss Cochran and T-38 Break Distance Record

Jacqueline Cochran streaked from Palmdale, California, to Minneapolis, Minnesota in a T-38 Talon supersonic jet trainer to set a new women's world non-stop jet distance flying record of 1492.394 statute miles.

The old record for distance in a straight line was held by Elisabeth Boselli of France who flew a Mistral jet 1448.55 miles on March 1, 1955.

The distance record was Miss Cochran's fifth new women's world flying mark in the T-38 since August 24. Four of these records—the 15 and 1000 kilometer speed marks and distance marks for closed course and straight line flight in jet aircraft—were returned to the United States from France. Miss Cochran also beat her own 500 kilometer speed record twice during this period.

The flight was accomplished in a standard, production version of the T-38 without use of external tanks or additional internal fuel tanks to increase the normal fuel capacity.

Based on data recorded by the National Aeronautics Association, Miss Cochran's string of records in the series now stands as follows.

Speed, 15 kilometers: 844.20256 mph, August 24.

Speed, 500 kilometers (closed course): 659 6 mph, August 31.

Speed, 500 kilometers (same course): 680.855 mph, September 7.

Speed, 1000 kilometers (closed course): 640.3924 mph, September 8.

Distance (closed course): 1346.3 miles, September 15.

Distance (straight line): 1492.394 miles, September 18.

Among the world records she intends to break in subsequent T-38 flights are her own 100 kilometer closed circuit speed mark of 652.552 mph, which she has held since May 18, 1953, and the women's international altitude record of 47,169 feet which she set May 24, 1953.

NEWS BRIEFS

ORBS AND THE LUNAR DECISION—Norair Division has made key presentations of Company-sponsored ORBS (Orbital Rendezvous Base System Studies) in the past few weeks. Reception has been favorable and interest high. Presentations were before NASA's Marshall Space Flight Center, NASA Headquarters' Heaton Committee on Orbital Rendezvous Operations, and the Space Task Group, and Langley Research Center. The presentation program continues with high level military and space agencies scheduled in the coming weeks . . . Orbital Rendezvous Base System is a Norair study of earth orbital operations being conducted by Astro Sciences, Norm V. Petersen, chief, as the logical method—space launch—to achieve the Apollo lunar mission . . . Big decision now facing NASA in placing men and equipment on the moon is the one-shot rocket method versus the space-launch concept as advanced by Norair. The Division feels that space launching (ORBS) has many advantages in that it would be a multiple approach with many by-product accomplishments including mission capability for cislunar excursions, lunar fly-bys, lunar orbiting, lunar landings, and interplanetary voyages . . . The system would also provide an adequate space base in which to conduct reentry studies and experimental research work. Powerful argument in favor of orbital launch is the time factor. Basic propulsion hardware is programmed while the one-shot mission waits for Nova, a vehicle in the concept stage estimated to be 5 to 10 years from operation.

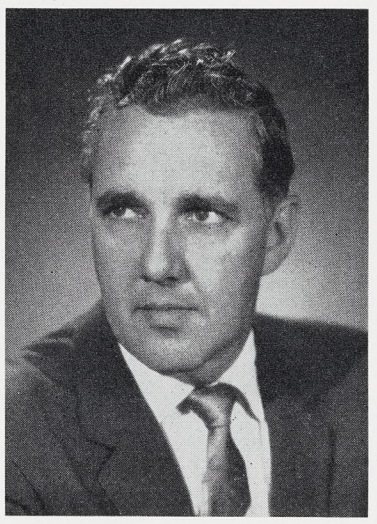
Haenke Assigned Senior Eastern Representative

Church Haenke, Marketing director, Manned Aircraft section, has been appointed to the position of senior representative for Norair Division, Washington office, it has been announced by Corporate Vice - president and Division General Manager Dick Nolan.

Mr. Haenke will replace W. W. Millikan, a brigadier general in the Air National Guard, who has been called into active service effective October 1.

For the Air Force story on General Millikan's colorful flying career, see Page 2. The story, written especially for the Norair News, was received at presstime from DCANG Information Serv-

(Continued on Page 3)



M. C. HAENKE

MISSION COMPLETE—Maj. O. C. Rez, of Anaheim, leads other pilots from needle-nosed T-38 Talons on completion of flight at Randolph AFB, Tex., a prelude to the Air Force's first supersonic pilot-training class for instructors in all-jet program.

Air Force to Start All-Jet Pilot Training

FIRST SUPERSONIC CLASS TAKES TO THE SKIES IN THE NEW NORTHROP T-38 TALON

By CHARLES HILLINGER, Times Staff Representative

RANDOLPH AFB, Tex.—The Air Force's supersonic pilot-training program takes to the skies.

Twenty-three of the nation's sharpest jet jockeys, hand - picked from bases throughout the AF Training Command, have spent the past several months writing the new program around the Northrop twin-engine T-38 Talon.

Here at Randolph, the Air Force's first supersonic pilot training class will be launched.

And instructors as well as students are itching to get the show on the road.

SUPERSONIC TRAINER

For the tandem T-38, this country's first designed-for-the-purpose supersonic trainer, closely approximates the Air Force's fleet of first line jets.

The nifty Northrop bird is twice as fast as the T-Bird T-33 it's replacing. Within two years, the T-33, in use since 1949, will be completely phased out.

Ready to be revved up side-by-side on the Randolph strip are 28 glistening new needle - like Talons fresh from Southern California production lines.

In coming months T-38s will be delivered by the dozens until 75 will fill the runways of each of the seven Air Force pilot training bases.

The 23 instructors, Lt. Col. Arthur Buck, program C.O., and Maj. Dan Engelhart, operations officer, all size up the T-38 as a real charmer.

Now, for the first time, student pilots will have to think and react as fast in training as in tactical units.

Once they've won their wings and no longer are students, they'll be able to devote their attention mainly to weapons systems instead of learning the tricks of supersonic flight.

The entire Air Force pilot

(Continued on Page 3)

FROM THE L.A. TIMES

The Norair News, with permission, reprints Timesman Hillinger's fine story on Talon training getting officially underway at Randolph.

ROSS MOVED TO COMMERCIAL PRODUCTS

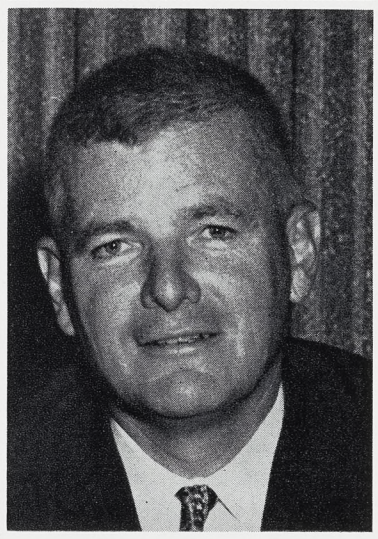
Morwick Ross, Eastern District Office representative, Washington, D.C., has been assigned to the Norair Division Treasurer's office as special assistant for Commercial Products, it has been announced by Grant Macdonnell, treasurer.

Mr. Ross will assist in planning and execution of Division commercial undertakings, particularly in the development of new products and in the rapidly expanding government and commercial markets.

Mr. Ross joined Norair in 1954. His first position was management coordinator of the Snark program. Subsequently, he served as development planner in the Corporate office and as T-38/N-156 project manager in addition to his work in Washington.

Prior to Norair, he was in governmental agency work having been executive to the assistant secretary for Aeronautics, Department of Commerce, 1947-50; and executive assistant

(Continued on Page 3)



MORWICK ROSS

Fighter Ace and Prisoner of War, Story Told of "Millie's" Career

Brigadier General Willard W. Millikan, senior Washington representative, Norair Division, Northrop Corporation will leave his Northrop office on October 1 to make the U.S. Air Force his full time job—at least for awhile.

General Millikan is commander of the 113th Tactical Fighter Wing, D.C. Air National Guard, which has been alerted for entry into the United States Air Force effective October 1, 1961. The unit had been previously designated as a priority unit on August 1, 1961 for possible activation.

DESTINATION UNKNOWN

For the time being, General Millikan and the rest of the DCANG will report to Andrews Air Force Base, just outside the Nation's Capitol in nearby Maryland, where the Wing conducts its training meetings. Its ultimate destination is as yet unknown.

He will be heading a Wing that is composed of three Tactical Fighter Squadrons, all flying F-100C Super Sabre aircraft. They are the 121st Tactical Fighter Squadron of the District of Columbia Air National Guard; the 136th Tactical Fighter Squadron of Niagara Falls, New York, and the 120th Tactical Fighter Squadron of Denver, Colorado.

As commander of the 113th Tactical Fighter Wing, General Millikan has a sizable management task. The unit is composed of more than 2200 men. His job starting October 1 will be to bring the Wing up to combat efficiency.

JOINED THE RAF

General Millikan's background has prepared him well for the huge task that lies ahead. After being discharged from the Army Air Force in 1941 after failing to pass flight checks, he joined the Royal Air Force and earned his pilot wings. As a sergeant pilot, he flew Hurricane and Spitfire fighters on combat patrols and escort and scramble missions.

In October 1942, he entered the Army Air Force as a second lieutenant in England and was assigned to the Fourth Fighter Group (formerly the Eagle Squadrons) of the 8th Fighter Command. He was promoted to first lieutenant in April 1943 and to captain in April 1944.

General Millikan commanded the 336th Fighter Squadron, 4th Fighter Group in England at the time he became a German POW after being forced to bail out following a mid-air collision with his wingman. By that time, he had become a triple ace by destroying 15 German aircraft (ME 109's and FW 190's). He escaped from prison camp in April 1945, just prior to the termination of hostilities in Europe in May 1945.

Released from EAD in January 1946, as a major, he joined the D.C. Air National Guard in October 1946 as an operations officer in the grade of captain. He was promoted back to major in October 1947 and was appointed commander of the 121st Fighter Squadron in May 1948. In October 1948, he was promoted to lieutenant colonel.

WHITE HOUSE SQUADRON

General Millikan commanded the 121st (White House) Fighter Squadron when this unit was called into Federal service in February 1951, for Korean War service.

In June 1951, he was appointed commander of the 33rd Fighter Interceptor Group (ADC) at Otis AFB. He later became deputy for Operations of the 33rd Fighter Wing at Otis before release from EAD in October 1952. He took over as commander of the 113th Tactical Fighter Wing (then the 113th Fighter Interceptor Wing) upon its reactivation in an Air Guard status at Andrews AFB on November 1, 1952, at which time he was promoted to colonel.

WEST TO EAST RECORD

On January 2, 1954, General Millikan established a new west to east speed record of 4 hours and 6 minutes, flying a combat-equipped F-86H Sabrejet with one refueling stop at SAC Headquarters, Omaha, Nebraska.

General Millikan was Federally recognized as brigadier general in December 1958. He is still an active tactical pilot with more than 2200 jet fighter hours.

His decorations and awards include the following: Distinguished Service Cross (3 enemy aircraft destroyed in one engagement); Silver Star (4 enemy aircraft destroyed); Distinguished Flying Cross with one Silver Oak Leaf Cluster; Air Medal with three Bronze Oak Leaf Clusters; Purple Heart; American Combat Medal; EAME Combat Medal with three Battle Stars; Victory Medal; WWII, National Defense Service Medal; Air Force Longevity Service Award, and Air Force Reserve Medal.

CALLED INTO SERVICE—Norair Senior Washington Representative Brig. General W. W. Millikan, right, takes up full-time duties as commander of the 113th Tactical Fighter Wing, D. C. Air National Guard. Here he greets Maj. General S. J. Donovan, deputy for Operations Tactical Air Command during visit by the TAC officer to the training camp site of the 113th.

To Take Major Role in SAE October Meet

Dr. William F. Ballhaus, Northrop Corporation executive vice-president, and George Douglas, Norair vice-president, Engineering, will participate as program planning committee members of the Aeronautic and Space Technical sessions in the forthcoming Society of Automotive Engineers national Aeronautic and Space Engineering and Manufacturing meeting scheduled for October 9-13 at the Ambassador Hotel in Los Angeles.

H. E. "Hap" Herdrich, assistant to the general manager, Norair Division, is chairman of the Southern California section of the Society of Automotive Engineers.

J. A. Van Hamersveld, Norair chief, Material Sciences and Value Engineering group, and P. A. Jacobs, director, Nortronics Manufacturing, are executive committee members of the Manufacturing Forum.

Norcrafters taking part in the Manufacturing Forum are Barny Gaiennie, co-chairman, "Metal Removal — Unconventional"; Harold Smallen, chairman; and K. E. Kuschell, secretary, "Electron Beam Welding - Aerospace Structures." From Nortronics Division as panel member is W. C Hanna, "A Candid Look at Reliability."

Contributing to the Aeronautic and Space Technical sessions are Norcrafters W. W. Harter, secretary and co-author, "Structural Impedance"; H. K. Hanchett, "Ground Support Equipment for Missiles, and Transports." Nortronics' Harry Himelblau, jr., chairman; F. B. Stafford and R. W. Mustain, "Structural Impedance"; J. M. Brust, "Random Excitation"; E. E. Groothuis and J. L. Thousand, "Automatic Landings—Transports."

LEE JOHNSON WRITES ON CONSERVATION

Norair Safety Engineer Lee Johnson is the author of the article in *Engineering for Safety*, monthly magazine published by the American Society of Safety Engineers.

Title of the article is "Europe's Built-in Conservation."

Mr. Johnson gathered material for his paper on a "postman's holiday" trip to Europe last season during which time he visited several factories in Germany and Switzerland.

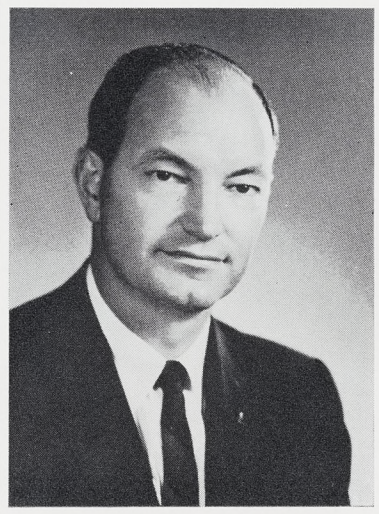
Lunar Traction Answers

SURFACE OF THE MOON—? No, but it must serve the purpose in Norair research until the real thing is available. Dr. Emanuel Azmon, Division lunar geologist, Planetary Physics and Chemistry Lab, samples beach sand to be used by Laboratory Research and Development group in lunar traction studies. Dr. Azmon (who knows more about physical properties of Southern California beach sand than any man having studied them mile on mile from the Mexican border to Point Conception) also, under Norair consultantship, supplies geological data on the subject to State of California Division of Beaches and Parks.

Northrop Votes Stock Split, Names Ballhaus to Board

Northrop Corporation board of directors last week voted, subject to approval of the shareholders, a two for one split of the Company's common stock.

Shareholders of record at the close of business December 22, 1961 would receive under the proposal one additional share for each share then held, Thomas V. Jones, Northrop president stated. The distribution of the additional



DR. WM. F. BALLHAUS

certificates would be made January 12, 1962.

The purpose of the split, stated Mr. Jones, is to make possible broader ownership of the Company's common shares.

The action requires the approval of the New York Stock Exchange, the Pacific Coast Stock Exchange, and the California Corporation commissioner.

In connection with the proposed split, the board also voted to increase the number of authorized shares to 7,000,000 from the present 3,500,000 shares. This action as well as the proposed stock split will be submitted for the approval of shareholders at the Company's annual meeting to be held at Hawthorne, December 12, 1961.

The board also elected Dr. William F. Ballhaus, Northrop executive vice-president, as a member of the board of directors.

Dr. Ballhaus fills the vacancy created on the board by the death last August 26 of Dr. Howard P. Robertson.

CLEARANCE SALE AT SAFETY SHOE STORE UNDERWAY

Today starts the big clearance sale at the Norair safety shoe store.

All kinds of safety shoes, men's and women's, are being marked down to clear out the shelves for 1962 lines.

Prices, same for men's and women's shoes, are $8 including tax for shoes and oxfords; $9 including tax for boots.

Regular price for shoes and oxfords is $14.04.

Regular price for boots is $14.67.

Women's shoes available include low heel sport shoes in all colors, nurse-types, outing-type, light work shoes, and casuals.

Men's shoes run the gamut from English-type oxfords through heavy work shoes and boots.

Shoe store is located at Plant One.

Hours are Monday, Tuesday, and Wednesday, 9 a.m. to 12:30 p.m. and 1:30 to 4 p.m.; on Thursday from 1 to 6 p.m. Store is closed on Friday.

Northrop-Norair News

VOL. 19 NO. 21

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A NORTHROP CORPORATION PUBLICATION
Published every other Wednesday
NORAIR DIVISION

CHARLES BRADFORD, Editor

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Management Club's Night Out

MANAGEMENT CLUB—Manny Harmon will provide fine music and variety show for the Management Club's dinner dance to be held at the Biltmore Bowl, October 7. The Bowl, long famous and "the" place to go and be seen in the Southland, has been completely refurbished for the evening. Says Dale Huss, M-C V-P and chairman of the dinner dance committee, "Get your tickets now."

PAUL GILBERT, M-C — His funny act rolled them in the aisles in Vegas at the Sands, here at the Moulin Rouge. He is acclaimed for his skit on a pay-TV surgical program, for his bit on volunteering to jump out of a disabled airplane. He will entertain M-Cers at the Bowl.

CHIQUITA—! And Johnson. Another variety act that will make the Management Club dinner dance a Northrop headline event of the year. Stepp Brothers have also been booked. Dinner will be prime rib. There will be door prizes but door prizes. Tickets are available from all M-C ticket reps, one or more in each facility.

NOT TOO LATE FOR NRC DANCING

Tomorrow, September 28, is the last day Norcrafters can register for the new NRC Ballroom Dance Class which launched a new 10-week series last week, it is announced by Wes Williams, commissioner.

Bill Martin will again be the instructor.

The very popular progressive system of teaching will be followed which calls for a change of partners at regular intervals. In this manner everyone dances —no one wallflowers.

The cost for the 10 meetings is $10 a person.

Mr. Martin will teach fox trot, tango, and other popular routines.

NRC PLANS FOR OLD FASHIONED PICNIC ALL SET FOR OCTOBER 22

The Northrop Recreation Club has arranged the best kind of picnic, a good old fashion one, to be held October 22 at South Gate Park.

There will be outdoor activities which no picnic is complete without. Games of all sorts with age limits pegged from 2 to 82.

The NRC will furnish that good ice cream, that good cotton candy, punch, snow cones, and clouds of balloons. During the big fun, there will be constant background music to support the theme, light and gay all the way. A band and organ will do the honors.

There will be an all-star softball game between Norair and Nortronics ES&E. There will be exhibition tennis matches featuring Norcrafter Bill Lurie who is men's senior hardcourt tennis champion. For those adults who simply must participate in sports, there will be a 9-hole pitch and putt golf tourney.

If you like dancing better than sports it's okay, for Leon Guide and his orchestra will crank out the Paul Jones, the one-step, bunny hug, and the Charleston, and if you feel your best, you might even tie into a cha cha, rhumba, or a samba.

A Congo line is also a possibility.

The NRC folk, President Dave Carney, says that there is every likelihood that the swimming and wading pools will be open during the day.

There will be prizes for the children and the grownups.

The word is, pack that basket lunch now and get ready for the big day. Maps on how to get to South Gate Park are available at Personnel Activities.

Times Story

(Continued from Page 1)

training program is being revamped.

ALL-JET PROGRAM

For the first time it's all jet. The Air Cadet program is out the window.

All student pilots are college graduates, commissioned officers, 95% from ROTC ranks. A man's got to be an engineer to be an Air Force jet pilot.

Primary contract schools have been closed. It's purely a military show today, with the year-long instruction period now confined to one base. No more jumping around with pre-flight at one place, primary at another, and basic, again somewhere else.

With the phasing in of the Northrop T-38, the student pilot will spend his first six months and initial flying time in the Cessna side-by-side T-37 trainer . . . 130 hours airborne in his primary cruise.

Then there will be 140 hours in the Talon, with a man winning his wings at the end. Currently, 2500 student-flyers 21 to 27 years old are enrolled in the Air Force pilot training program

Excitement is running high in the ranks of the Talon instructor test force as the day approaches. For they've flown the program written it as well, and will improve and modify the results during the upcoming six-month first student training period.

The Air Force student is going supersonic, making the transition from civilian life to the F-100, F-102, F-106 in only a year's time.

Haenke

(Continued from Page 1)

ices Officer, Second Lieutenant Robert E. Dimond.

Coupled with the announcement of Mr. Haenke's appointment was the advice that Norair Washington representative functions are being transferred organizationally from the office of the Norair general manager to Marketing. Mr. Haenke will report to Vice-president John Alison of that department.

Mr. Haenke, a graduate engineer from the University of Southern California, has been a Norcrafter since 1952. He was an electronics officer in the USAF during World War II and in Korea and, currently holds a commission of lt. colonel in the USAF Reserve. His first position at Norair was project engineer on the Snark missile.

Ross

(Continued from Page 1)

to the Civil Aeronautics Administrator, 1950-54.

Mr. Ross has a B.S. in mechanical engineering from Northeastern University. He also studied at the Harvard Graduate School of Engineering (Navy course), and George Washington University, District of Columbia, economics.

NRC Travel Club

Proudly Announces

Northrop Corporation Yearend Hawaiian Holiday

DECEMBER 26–JANUARY 1

COST: $258 EACH

Brochures & NRC Traveletters Available at Personnel Activities Offices Extension 2784

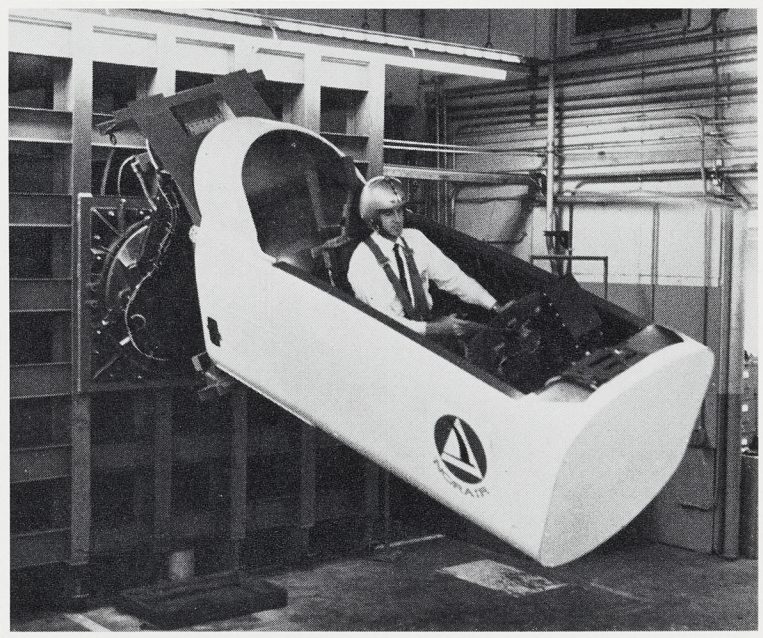
FASHION SHOW FOR SECRETARIES

The Airborne Chapter, National Secretaries Association (International) has announced Thursday, October 12, as the date for their seventh annual fashion show. The event will be held in the Ports O' Call restaurant in San Pedro. Social hour will begin at 6:30 p.m. and dinner at 7:30. Drawings for door prizes and the presentation of fashions will follow dinner.

In keeping with the exotic Tahitian atmosphere of the restaurant, Norcrafter Edna Parker, chairman of the event, and her committee have chosen the theme of "Far Away Places" with fashions presented by the Come and See Shop of Manhattan Beach.

Other Norcrafter members of the Fashion Show committee: Ila Brock, secretary to R. M. McNamara, controller, Norair Division; Mayme Colombo, secretary to Jack Mannion, assistant to vice-president and general manager, Norair Division; Marge Phillips, secretary to Ross Miller, assistant manager and chief engineer, Electronic Systems and Equipment Department, Nortronics; and Margaret Boles, staff assistant, Northrop Corporation.

Mrs. Parker is secretary to Don Lewis, treasurer, Nortronics Division.



TOPSY TURVY TEST—Twisting and turning in VTOL (vertical take-off and landing) aircraft simulator at Norair is James A. Isca, aero sciences engineer, Aero and Propulsion Sciences group. This movable test vehicle, which can be maneuvered to positions of roll, pitch and yaw, simulates a 40,000-pound supersonic VTOL fighter in hovering flight. Northrop is using the test vehicle to define the control power-controllability relationship for all-weather VTOL instrument flight.

RIDES WANTED

7 a.m. — 3:45 p.m.

VERMONT & LOS FELIZ, Hollywood. CARL HARMAN, ext. 2075, NO 2-1535.

WESTERN & 247TH ST., Lomita. JERRY SMITH, ext. 1820, DA 5-2280. 2

7:30 a.m. — 4:15 p.m.

TORRANCE BLVD. & HICKORY, Torrance. L. A. DIETRICH, ext. 1304. FA 8-3509. 3

LINCOLN & PICO or PICO & 4TH, Santa Monica. HARLAN P. RUTTER, EX 2-2628.

8 a.m. — 4:45 p.m.

DEL AMO & CHERRY AVE., Lona Beach. R. P. BARBARA, ext. 2123, GA 7-6097. 5

ENCINAL CANYON & 101 HWY., Malibu. PHYLLIS ELLIS, ext. 477, GL 7-7411. 5

LOS ALAMITOS BLVD. & KATELLA, Los Alamitos. RICHARD LEE JONES, ext. 1883, GE 1-9620. 5

3:45 p.m. — 12:15 a.m.

LONG BEACH BLVD. & LIBERTY, South Gate. THOMAS LIOTTA, ext. 545, LU 1-3982. 6

RIDES OFFERED

7 a.m. — 3:45 p.m.

VERMONT & LOS FELIZ, Hollywood. CARL HARMAN, ext. 2075, NO 2-1535.

PROSPECT & TORRANCE BLVD., Redondo Beach. JOHN A. CABLE, ext. 2200, FR 2-0149. 12

CRENSHAW & LOMITA BLVD., Lomita. IRENE A. NELTRO, ext. 2247, DA 6-3785.

7:30 a.m. — 4:15 p.m.

TORRANCE BLVD. & HICKORY, Torrance. L. A. DIETRICH, ext. 1305, FA 8-3509. 13

LINCOLN & PICO or PICO & 4TH, Santa Monica. HARLAN P. RUTTER, EX 2-2628.

8 a.m. — 4:45 p.m.

ENCINAL CANYON & 101 HWY., Malibu. PHYLLIS ELLIS, ext. 477, GL 7-7411. 15

LOS ALAMITOS BLVD. & KATELLA, Los Alamitos. RICHARD LEE JONES, ext. 1883. GE 1-9620. 15

MELROSE & VAN NESS AVE., Hollywood. C. M. SPINDEL. ext. 518, HO 5-8023. 15

3:45 p.m. — 12:15 a.m.

LONG BEACH BLVD. & LIBERTY, South Gate. THOMAS LIOTTA, ext. 545, LU 1-3982. 16

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

BOAT, 14′ Javlyn, & portaae trailer, $350. EX 7-4493. A

FORD, 1951, V8 ½ ton pickup, r/h, oversize 760x15 w/w tires & new paint, ena. overhauled, $525. FR 1-3769. A

ACREAGE in Joshua Tree, Calif., $340 acre. LA 1-2073. A

SAILBOAT, R-11 #100 racina sloop, planina hull, American trailer, dacron sails, boat cover, fully equipped, $550. FR 5-7168. A

STAUFFER REDUCER, elec. timer & stretch bar, $195. VE 8-5123. A

BICYCLE, boy's, 24", blue, $18. PL 7-4252. A

WASHER, Whirlpool, automatic, $15. FR 9-5690. A

DACHSHUND, 6-mo-old, w/AKC papers, licensed, all shots, complete w/doa food supply, leash, backyard chain & stake, $50. OS 6-1404. A

VOLKSWAGEN, conv., radio, tonneau cover, many access., $650; sewina machine, Singer, treadle model, $8. TE 3-4191. A

CHILDREN'S TOYS, poao stick, $2; sprina jumpina shoes, $2; roller skates, shoe-type, size 2, $2; deluxe Storkline doll buaay, $10; view master, w/projector, & slides, $4; sewina machine, Singer, $6. AX 2-4958. A

ACCORDION, 120-bass, student's, med. size, $80. OS 6-8331. A

CHRYSLER, Royal, 1938, restored, $200. OR 1-2783. A

STUDENT DESK, 18"x40" top, 7-drawer, maple. $12.50. VE 9-7378. A

ZOOM LENS, Pan Cinor 30, ranae 10 thru 30 NM, built-in ranae finder, 2.8 f stop, $100. DA 3-0979. A

DRAFTING MACHINE, Bruning, w/scales, $60. DA 9-2371. A

BEDROOM FURNITURE, maple, bedstead, sinale, chest-on-chest, nite stand $35. HA 9-2764. A

FOR SALE

STOVE, 4-burner, apt.-size, 14-yr.-old, $45. DA 4-0109. A

CHAIR, areen, upholstered, $5; mirror, beveled-edae, 41"x64", $10. OS 5-6206.

SILVER FOX STOLE, artificial fur, $15. OR 8-7414. A

GAS RANGE, Caloric deluxe auto., $20. GR 2-2882. A

MORGAN CRAFT, 16′. 40 hp Scott, elec., 2 tanks. $775. PL 1-7753. A

REDUCING TABLE, Silhouette, w/exercise instructions, $89. FR 9-2659. A

BOX SPRINGS, mattresses, 2, w/frames, $40; Frigidaire, 9 cu ft., $35. EX 8-9918.

BABY FURNITURE, playpen, bathinette, buaay, $20; youth bed & crib, $20. FA 1-1326. A

HOUSE, 3-bdrm., covered patio, landscaped, in Torrance. $18,100. TE 1-3737.

LAWNMOWER, rotary power, Briaas & Stratton ena., 3-yr.-old. $25. OR 2-3092.

WOOFER, 15". 16 ohm, 25 w., w/Universal crossover, $25. TE 1-5158. A

DODGE CORONET, 1956, 2-dr. sedan, r/h, auto. trans., w/w, $650. TE 3-0889.

TRICYCLE, child's, 17". $5; chuck, 3-jaw, Cushman, w/reversible jaws, 5", $30. PL 7-2753. A

TRANSISTOR RADIO, Mercury 2, case & earphones, $9; bowlina ball, 16 lbs., w/baa, $10; ski boots, size 8, $10. HA 1-2265. A

MERCURY STATION WAGON, 1953, 4-dr., auto. trans., r&h, $295. TE 3-3944.

FORD CUSTOM, 1955, 2-dr., $300. GE 1-0658. A

DESK, mahoa., 8-dwr., w/alass top, desk chair & acces., $48. AX 1-3778. A

VOLKSWAGEN SEDAN, 1956, tan, leatherette uphol., $790; baby crib & mattress, $25. PL 8-5956. A

ENCYCLOPEDIA SET, American Peoples, w/Yearbooks from 1958; cocktail table, limed oak, bookcase, $225. PL 6-0015.

MOTORCYCLE, 1957 Ariel, 500 cc, sinale cyl., w/access., $350. DA 9-2889. A

ANSEN POSI-SHIFT, deluxe model, for 1955 Chevrolet. $35. PL 4-3665. A

SURFBOARD, $60. OS 6-6297. A

KITTENS, 2, tiaer-striped, 3-wk.-old, $5 ea. GE 1-9787. A

GUITAR, w/case. $25. EA 2-2472. A

OUTBOARD MOTOR, 30 hp, w/controls, 2 tanks. $250. OS 5-5944. A

REFRIGERATORS, Friaidaire, apt.-size, $50; Westinahouse, $25; freezer, 5 cu. ft., $25; ice box, Jewel, $6; stove, apt.-size, $25. DA 4-3195 A

SKI-BOAT, 16′, 1960 Sea-Skate, w/Evinrude 40 hp ena., trailer, elec. starter & rite-auard steerina, cost $1800, take over payments of $50 mo. for 19 mo. FR 2-2276. A

SCOOTER, small, McCulloch, 2½ hp Clinton ena., $100. OR 7-3044. A

HEADBOARD, pink stained, w/dresser, vanity mirror, $40. OS 6-5873. A

CHAIRS, 4, for dinina room, $32. FR 6-9642 A

PISTOL, Colt Auto, 45 cal., late model, $55 FA 8-8841. A

MODEL A FORD, deluxe coupe, 1931, new clutch & brakes, $295. PL 5-7692.

DOORS, indoor-type, $1 ea.; stove, oil-type heatina, $10; Choremaster aasoline posthole diaaer, $75; well pump jack, $17.50; windmill pump & cylinder, $10; aluminum shower, $10; Homart 1 hp jet pump & access., $90; 220′ of ¾" steel cable, $12.50; iron T clothesline posts, $2 ea. VE 7-4237. A

WANTED TO BUY

HARDTOP for MGA roadster. DA 3-0153.

SAILBOAT, Sabot. FR 5-4747. B

PIANO, small, full keyboard. LO 4-1988.

BICYCLE, boy's, 26". TO 1-6404. B

PIANO, TE 1-2973. B

FOR TRADE

IRONER, Maytaa, late model, trade for ceramic kiln. TO 1-8779. C

FREE (to be given away)

KITTENS, 7-wk-old. FA 8-3168. D

KITTENS, 2 white, 1 black, part Siamese & Persian. FR 2-8711. D

KITTENS, lona hair, all white, all arey. TE 1-1090. D

PUPS, mixed boxer. FR 7-1732. D

RENTALS OFFERED

DUPLEX, 1-bdrm., furn., aaraae, disposal, couple or sinale, avail. Oct. 1, $90. OR 4-5901. E

HOUSES, 4-bdrm., unfurn., 4 blocks to Northrop, $125 mo. 1-bdrm., furn., in Lawndale, $80 mo. OS 6-1574. E

APT., children & pets OK, lae. patio, water & trash pickup pd., paved parkina, $65 mo. OS 9-5153. E

HOUSE, 3-bdrm., 1¾ bath, 1.5 mi. from Northrop, $175 mo. PL 4-7410. E

RENTALS WANTED

GARAGE, double or sinale for storaae. FR 2-7133. F

FOR SALE OR TRADE

HO TRAIN LAYOUT, 5x9 retractable table, 4 ena., 18 cars, partially landscaped, $135 or trade for trans. car or motorcycle, DA 3-1026. M

NRC Vignette #16

NRC Toastmasters

THE NRC TOASTMASTERS—Can we think on our feet? In front of an audience? A critical audience? If not, the NRC Toastmasters activity is for you and I. Called the greatest boon to bashful folk this side of an allemande left, the T-Mers will make an orator out of you or else. The Clubs, Norair has two, #212 days, and #1398 nights, meet once each week for dinner and luncheon respectively. Programs give all members a chance to develop their ability to speak in public. Fact, a new member must give a speech on his third meeting. Shown at a typical meeting with Commissioner John Langdon at the chair are clockwise around the table, guest Lou Kenney, Inglewood City Councilman; Guy Haskell, Clyde Fine, Cliff Lillo, Bill Justice, and Walt Darby. Joining is easy. Just call Personnel Activities or go to the Cockatoo on meeting night. TIMES PHOTO

Fox Hills Set For NRC Golf October 14, 21

With a complete sellout register at Personnel Activities for the upcoming El Cajon golf tournament, November 4 and 5, an interim match will be played at Fox and Baldwin Hills on the Saturdays of October 14 and 21, it is announced by Ken Clayton and Bernie Doyle, commissioners.

Tee-off time at Fox and Baldwin Hills will be 12:30 p.m. on both dates.

Six foursomes will be scheduled to tee off on both courses on both dates which totals to 96 golfers in all who may participate.

Cost is $5.50 each which includes a 50 cent prize fund.

Norcrafters may obtain their entry forms and pay their fee at Personnel Activities.

Starting time as announced will be assigned on a first come basis. Entries open October 9.

SC, UCLA, HOME GAME DUCATS ON SALE AT P-A

Raccoon coat season is here.

Personnel Activities announces that football tickets for all USC and UCLA home games will be in stock here at the plant.

The tickets are for good reserved seats for Trojan and Bruin games played this fall at the Coliseum.

One week has gone by already with USC playing Georgia Tech and UCLA playing Vanderbilt with their respective openings.

Ticket purchases may be made at Personnel Activities during the hours of 11 a.m. to 12:55 p.m. and 3 to 4:55 p.m.

Red Hots Win Softball Title, HR Honors Tied

Norcrafters Bill Greene, Dick Roundtree, and Don Greco have won top softball honors for the season.

The Red Hot team from Tool Engineering, managed by Commissioner Mac McConnell, won the championship for the third consecutive year.

The Red Hots took the deciding game from the Chaos team by a shut out score of 11 to 0.

Bill Greene won the batting championship with a 558 for the season. His teammates Dick Roundtree batted 526 and Chuck Hiller batted 500. All were members of the Red Hots.

Home run honors wound up in a three-way tie between Bill Greene again, Don Greco, and Chuck Chamberlain.

The most coveted award perhaps, the most valuable player as selected by managers and umpires was awarded to Dick Roundtree.

Norair's past softball season was considered by many of the players to be one of the best in the history of the leagues.

THE ONE THAT DIDN'T—Get away that is. Joe Schorle, Sheet Metal Shop, had a very satisfactory vacation at Morro Bay as indicated by the smile on his face and that big beauty of a silver salmon, 31 pounds 15 ounces, at his side. The fish bids fair to be a record breaker in the Southwest Anglers Button Award Association. Naturally Joe's silver won the NRC award for the largest fresh-water catch in August.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, October 11, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

NEWS BRIEFS

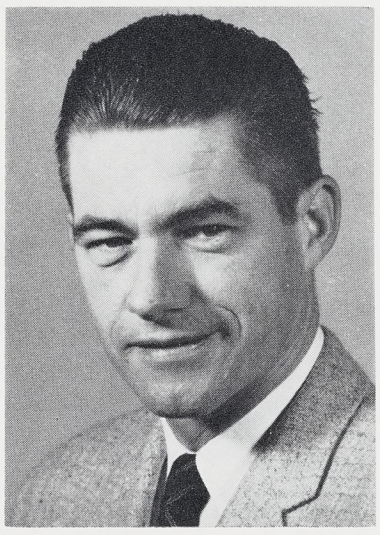
INDIAN WELLS—A Northrop Corporation executive conference headed by President Thomas V. Jones was held at Indian Wells last week, 5 through 7 October, for a series of strategic long range planning sessions. Norair contingent was led by Corporation Vice-president and Division General Manager Dick Nolan. Agenda included state-of-the-Corporation review as initial order of business, followed by a series of high level panels with representatives from each Division taking part. Panel subjects included space programs, military research and development, commercial undertakings, personnel development, financial aspects, and a look at the international business picture.

LETTER CONTRACT FOR MORE TALONS — Al Morgan, vice-president, Contracts and Service, has announced that letter contract has been received from the Air Force for 144 airplanes for the 1962 fiscal year buy. These airplanes will be delivered during calendar year 1963. Air Force funds were earmarked for this contract as early as February 1961. (See News Briefs, 1 February.)

MISS COCHRAN DOES IT AGAIN—Jacqueline Cochran has flown a T-38 Talon jet trainer 748.3 m.p.h. at Edwards Air Force Base to break her own eight-year-old 100-kilometer women's world flying speed record . . . The old record of 652.5 m.p.h. was set by Miss Cochran in 1953 at Edwards in a Canadian-built F-86 jet fighter . . . Miss Cochran, who has flown the T-38 to new world's records for every existing women's speed mark for measured distances, piloted the trainer over the 100-kilometer closed course Friday.

LAMINAR FLOW CONTROL—Complete funding increment for fiscal year 1962 has now been assigned to the Laminar Flow Control airplane demonstration program by the Air Force, it has been announced by Milt Kuska, manager, Laminar Flow Control Technological Airplane Project Department. Funding is in the amount of $17.6 million . . . Regular bimonthly development engineering review by an Air Force team from Aeronautical Systems Division was held at Norair last week. Leading the team were Hans Peot, assistant chief of Air Force LFC Project Office, and Major E. R. Schenker, LFC chief project engineer . . . LFC program target dates remain the same as originally scheduled with current status in key progress points as follows: Wind Tunnel program testing is 90 per cent complete; model construction is 98 per cent complete. Design and Development effort is at its peak; 90 per cent of engine and nacelle drawings and a number of wing panel drawings have been released. In Laboratory Test, primary tests have been completed on the wing structural box and compression panels. This program will reach a high level of activity this month and in November when component testing and propulsion system testing will begin . . . In Construction, 100 per cent of major wing panel bonding fixtures are now in fabrication; fabrication of wing panel and engine nacelle parts is under way; AiResearch-Phoenix is progressing on schedule with design and development of LFC pumping system. Also, modification of J-79 engines to LFC requirements by GE is on schedule with first unit now at Hawthorne . . . The next major milestone on the project will be achieved in late December when 90 per cent of all wing structural drawings will have been released to Manufacturing . . . Automated Operations Control, one of Norair's outstanding management tools is being phased into the program. PERT has been in use for over a year.

James Duncan Heads Radiation Lab



JAMES M. DUNCAN

James M. Duncan, who comes to Norair with 17 years of diversified experience in reactor operations and nuclear programs has been assigned laboratory head, Reactor Radiation Laboratory, it has been announced by Philip Brooks, supervisor, Nuclear Sciences branch.

Mr. Duncan will handle installation and operation of the Northrop reactor (NOR) now beginning construction.

Mr. Duncan received his M.S. from the University of Wisconsin in 1944 and has participated in many operational and experimental atomic programs including work for the Manhattan proj-

(Continued on Page 2)

Northrop Architectural Systems New Name for Acme-Arcadia

Norair's Acme Metal Molding Company and Arcadia Metal Products have been combined in a single organization to be known as Northrop Architectural Systems, it has been announced by Thomas V. Jones, Northrop Corporation president.

Northrop acquired Acme Metal Molding more than a year ago and more recently Acme acquired all of the assets of Arcadia Metal Products, formerly of Fullerton. Activities of Arcadia have been consolidated with expanded Acme facilities at 5022 Triggs Street, City of Commerce. The entire commercial complex operates under the jurisdiction of Norair Division.

Acme is the west's largest producer of aluminum store fronts and entrances. Arcadia fabricates and installs glass doors, window wall systems and the Brise Soleil line of architectural sun control systems.

Curtainwall systems were recently added to the Northrop Architectural Systems line when Pacific Curtainwall, Inc., of Long Beach, affiliated with NAS through the parent Northrop Corporation.

Pacific Curtainwall manufactures and installs standard and custom curtainwall systems of aluminum or steel.

Thomas Beyrle, president and founder of Acme, will continue as president of Northrop Architectural Systems. Thomas A. Beyrle, who was vice-president and general manager of Acme, will continue in that capacity, and Henry E. North, jr., founder and president of Arcadia, also has been appointed vice-president.

Other Northrop Architectural Systems executives include Donald H. White, secretary and controller; D. P. Johnson, national sales manager; and Irvine M. Styer, manager, Marketing Services.

Production facilities at 5022 Triggs Street have been expanded from 60,000 to 100,000 feet and redesigned to house the entire Northrop Architectural Systems manufacturing program. A new headquarters building is scheduled for construction this fall on the same property.

Northrop Architectural Systems also maintains sales and warehousing facilities in Mountain View, California; Dallas, Texas; and Vancouver, British Columbia. Acme and Arcadia products are marketed by distributors in other areas of the United States, Canada, Mexico, and overseas.

Norcrafters See Names In Lights

Norcrafter Suggestion Award Men-of-the-Month for July, August, and September now have their names in lights throughout the plant.

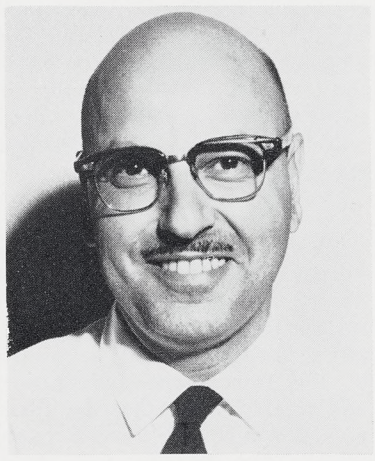
The three men, Sam Young, A. M. Orthof, and Herbert E. Langman, between them received nearly $600 for suggesting better ways to get the job done.

Young, Plumbing and Hydraulics, 5164, suggested that a Sprague air-operated 10,000 PSI pump on the Sheridan stretch press be used in place of the 6000 PSI piston pump. The suggested scored heavily in cutting down maintenance and repair and increased safety margins on the press. The award was $153.

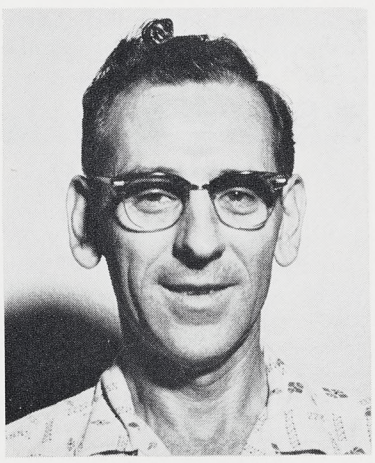
Herbert Langman, Engineering Laboratories, suggested a resistance welding method instead of peening to attach chromel-alumel thermocouples to beryllium specimens in running tests on a Lockheed Missile and Space Division contract. Much time was saved, the safety factor was increased and reliability upped. The Langman award amounted to $188.

The Man-of-the-Month suggestion award for A. M. Orthof,

(Continued on Page 2)



A. M. ORTHOF



SAMUEL S. YOUNG

It's Makahiki for a Lucky Norcrafter at NRC Picnic

The glitter of the broad Pacific plus sounds of soft music, plus sounds of trade winds in the palms are adding luster to the already lustrous NRC Old Fashion picnic to be held October 22 at South Gate Park.

Biggest headline of that day now promises to be a free Hawaiian holiday. All Norcrafters who attend and who register at the NRC Travel Club booth will stand a chance to have their name drawn and become a winner of a free ticket on Northrop Corporation's yearend Hawaiian holiday.

There will be only one free ticket given. To be eligible, the winner must be a Norcrafter or the wife or husband of a Norcrafter. Children and relatives do not qualify. The winner must also be at the picnic to win.

HERBERT E. LANGMAN

Complete details of the trip, which will cost $258 for those who have to pay, are in another story in this issue.

So it's a makahiki for a Norcrafter kane or wahine on that big Sunday at South Gate Park, October 22.

Even without a free ticket to Hawaii, the picnic will be plenty of fun-fare for those attending. There will be hundreds of other prizes including one for the largest family on hand, that is dad, mamma, and the kids. A prize for the youngest participants, boys and girls, and a prize for the oldest participants, men and women.

The merrymaking, say NRC folk, starts at 10 a.m.

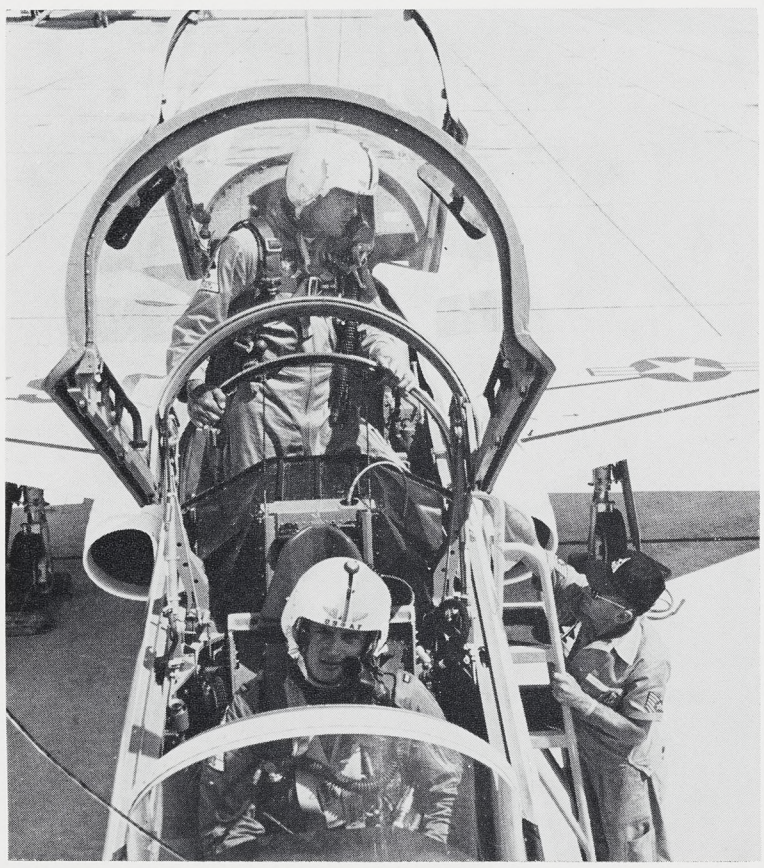
A basket lunch is a good idea.

There will be free refreshments such as snow cones, ice cream, cold punch and cotton candy. There will be an all-star softball game between Norair and Nortronics ES&E. There will be exhibition tennis matches featuring Norcrafter Bill Lurie, men's senior hardcourt tennis champion. There will also be a 9-hole pitch and putt tourney. There will be dancing and games.

A suggestion, ask your clerk to help generate a picnic party from your organization.

"YOU'LL FIND that pre-flight procedures and inspections are much like those of the T-37."

"I'LL STAND on the ladder and help you in starting the right engine . . ."



. . . THEN I'LL climb in the rear cockpit and help you start the left engine on interphone."

Student Orientation Ride

AIR FORCE BRIEFING ON FIRST T-38 FLIGHT

By Lt. Colonel Arthur W. Buck

"Sit down Lieutenant, and we'll brief for this mission. Since this is your first flight in the T-38, I'll try to give you an idea of what to expect.

"This first ride is called an orientation flight and its main purpose is to let you see how the Talon performs through entire range of operation, from high altitude supersonic flight to the landing pattern. I'll be doing most of the flying this time so that you'll be free to look around and become familiar with the airplane and the local flying area.

Volume 1, Number 1, of the Talon Service News has just been printed and is now in the hands of the many key people, military and Company, who will service and fly our new supersonic sweetheart.

This signals, perhaps better than any other event, official operational debut of the T-38.

"Student Orientation Ride" with acknowledgments to author Colonel Buck is reprinted from that first issue.

"Now you've been flying the T-37 in Primary, so multi-engine jet operation is nothing new to you. This is about as far as the similarity goes, however, and mastering the high performance characteristics of the T-38 should present a real challenge to you.

FOLLOW YOUR CHECK LIST

"First of all, you'll find that pre-flight procedures and inspections are much like those of the T-37. Actually, the pre-flight cockpit checks and procedures are fewer and less complex in the Talon. Just be sure that you understand and follow your check list and you can't go wrong.

"I'll stand on the ladder and help you in starting the right engine, and then I'll climb in the rear cockpit and help you start the left engine on interphone. You've been briefed already on the rocket ejection seat, but we'll go over the procedure again when you get strapped in.

"You'll find this bird very easy to taxi with nose wheel steering engaged. All you have to do is use a little rudder. Actually, it taxis pretty easy without nose wheel steering, and I'll let you try it for familiarization.

TO 45,000 FEET

"We'll be making an afterburner takeoff and climb to 45,000 feet. From the time we release the brakes until we level off at altitude, you'll be aware of the tremendous acceleration and rate of climb that the J-85s give this bird. We'll be through 40,000 feet in less than four minutes after brake release. I want you to notice particularly, the smooth nose rotation for takeoff and the nose high attitude required to maintain our Mach climb schedule.

NOW FOR SUPERSONIC

"Once we're at altitude, we'll put the bird through its paces, including some supersonic flight. You will notice in flying over the speed of sound that nothing really happens. This aircraft was designed to fly supersonic, and the only real indication that you'll have is the Mach number on your airspeed indicator. This may come as somewhat of a letdown, but it should dispel any doubts or misgivings you might have had about the so-called sound barrier. We'll try some supersonic turns and rolls to demonstrate how maneuverable the T-38 is and how well it holds supersonic flight. Also we'll try some stick and rudder pulses and you'll see how the stability augmenter system dampens them out.

THE TIGER START

"When we've finished the high altitude work, we'll let down to around twenty thousand feet and I'll demonstrate some normal air work and aerobatics. Notice the smooth, rapid control response over the entire airspeed range. I'll talk you through several of the maneuvers so that you can feel the light control pressures necessary to fly a jet with a fully boosted flight control system. We'll do some stalls in the clean and landing configuration. The T-38 is a very honest airplane and will give you plenty of warning. You will encounter ever-increasing buffet and sink rate as the stall develops.

"Then I'll shut down an engine and show you the simple air start procedure. Only two steps are necessary. I'll also show you the "Tiger" start, which consists of only one step; simply opening the throttle to maximum power. This could come in real handy in the traffic pattern if you ever need a quick start and full power.

TOUCHDOWN

"When we've completed our air starts and I've shown you the local flying areas, we'll enter traffic and I'll demonstrate some landings. I'll show you the normal pattern and no-flap and single-engine approaches. The T-38 traffic pattern is similar to most of the Century Series birds—a fairly wide pattern with a long well established final approach. You'll notice that we hold a nose high, almost landing attitude, on final and maintain the desired glide slope to the runway with power. Power is not reduced to idle until we begin the final flare for touchdown. This is what we call the power-on approach, and it is common to all high performance aircraft. You'll find that the T-38 is easy to land, once you get used to it. We'll also make some go-arounds, closed patterns, and single-engine patterns. I think you'll be surprised at how well the bird handles on one engine.

"Well, that should just about wind up this first mission. I'll cover the specifics on each maneuver as I demonstrate it. Any questions? OK, fine, let's get out our gear and go out to the bird. I'm sure you've been looking forward to this flight."

COLONEL BUCK, VETERAN PILOT

Lt. Colonel Arthur W. Buck, T-38 Category III test director, was deputy director of T-38 Category II Test Force at the Air Force Flight Test Center, Edwards AFB.

A veteran Air Force pilot with over 20 years service, he flew fighters with the 9th Air Force over Belgium and Germany in World War II, and in Korea with the 51st Fighter Wing.

Colonel Buck served as director of training for ATC at Williams AFB, Arizona from 1952-55, followed by three years as assistant professor of Air Science at the University of Puerto Rico. He holds a Ph.D. degree from Carroll College, Waukesha, Wisconsin.

In 1958 he returned to Headquarters ATC in San Antonio as project officer for the T-38 and moved to Edwards AFB to become deputy director of the T-38 Category II phase of the test program in 1960. Upon completion of the program in February 1961, Colonel Buck assumed his present position as Category III test director.

$$$ Awards

(Continued from Page 1)

8360, was the result of his suggesting standardization of graph and drawing forms for Division proposals and Art Services work. High savings were achieved in cutting down reproduction time consumed in replotting of grid lines to conform to the working area of the standard Norair proposal page. Orthof's award amounted to $238.

Lab Head

(Continued from Page 1)

ect at Oak Ridge, design and construction of high level gamma irradiators, and studies on the FWCNG 40 megawatt nuclear powerplant.

He was also in charge of the installation and operation of the University of Florida reactor, and served as a consultant to the Commonwealth of Massachusetts for review of a nuclear program and facilities. Most recently, he planned and supervised reactor startup for the UCLA reactor at Westwood.

He is a graduate of the Oak Ridge School of Reactor Technology, 1955.

The Northrop reactor (NOR), consisting of a TRIGA Mark F core, diversified supporting equipment, and specially designed pool and irradiation facilities, will be the principal component of the Reactor Radiation Laboratory. The objective of this laboratory will be to provide both transient and steady-state radiation for activation, environmental simulation or testing, and nuclear physics research.

Northrop-Norair News

VOL. 19 NO. 22

1001 E. Broadway, Hawthorne, Calif.
A NORTHROP CORPORATION PUBLICATION
Published every other Wednesday
NORAIR DIVISION

CHARLES BRADFORD, Editor

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RIDES WANTED

7 a.m. — 3:45 p.m.

PACIFIC COAST HWY. & LONG BEACH BLVD., Long Beach. Stanford Fucich, ext. 2078, HE 2-5327. 2

7:30 a.m. — 4:15 p.m.

VERMONT & COMPTON BLVD., Gardena. Irene Montesono, ext. 1222. DA 9-8468. 3

WOODRUFF AVE. & SOUTH ST., Lakewood. Jim Greenough, ext. 1401, TO 6-5703. 3

8 a.m. — 4:45 p.m.

MANHATTAN BEACH BLVD. & INGLEWOOD AVE., Redondo Beach. Shirley Wilson, ext. 2024, FR 2-4291. 5

4:45 p.m. — 1:15 a.m.

LA CIENEGA & RODEO, Los Angeles. Lois Patricia Chodes, ext. 2228, VE 9-6219. 8

RIDES OFFERED

7:30 a.m. — 4:15 p.m.

WOODRUFF AVE. & SOUTH ST., Lakewood. Jim Greenough, ext. 1401, TO 6-5703. 13

8 a.m. — 4:45 p.m.

MANHATTAN BEACH BLVD. & INGLEWOOD AVE., Redondo Beach. Shirley Wilson, ext. 2024, FR 2-4291. 15

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

AT THE SAFETY STORE, safety shoes, eye exams, prescription safety glasses. HOURS, 9 a.m.-4 p.m. Monday, Tuesday, Wednesday; 1-6 p.m. Thursday; closed Friday. Ext. 1550. A

SWING SET, 2 swings, 1 bar, glider & slide, $20. FR 5-0747. A

FURNITURE, chairs, modern, upholstered, $20; desk & chair, 7-dwr., $25; table lamp, $5. FR 5-8536. A

ACCORDION, 120-bass, student-size, $80. OS 6-8331. A

RUG, Chinese wool hooked w/pad, 11'x11', 2 matching rugs, 4'x6', $50. PL 8-5039. A

HILLMAN, 1959, convert. coupe, pea green, w/w, heater, less than 7000 miles, $975. FR 5-6277. A

RUG, 9'x15'6", Berven Mills early California broadloom, reversible multicolored wool w/pad, $30. PL 5-8417. A

FORD V-8, 1951, 2-dr., $100. FA 8-5171.

KITTENS, half-Manx, $10 ea. FR 8-4764.

ROTARY LAWNMOWER, hp-4 cycle, Briggs-Stratton, $25; juicer, Acme Supreme, 3-yr-old, $50. OR 2-5578. A

PARACHUTE, 24', backpack-type, nylon quick-fit harness, foam rubber back pad, nylon canopy, $35. FR 8-5744. A

ENCYCLOPEDIA SET, American Peoples, w/yearbooks from 1958, w/12 volumes of youth books; bookcase & cocktail table, limed oak, $200; record collection, over 200 78 rpm, ranges from Glen Miller to classics, many in albums, $20. PL 6-0015. A

HOUSE, 3-bdrm. bath & ½, garb. disp., built-in range & oven, water softener, 6' block wall around large yard, patio, 2-car garage, in Anaheim, $15,200. PR 4-1718, bet. 12 noon & 3 p.m. or Box 2201. A

CLOSET, portable, cloth-type, 6'x4'x3', $10. OW 1-6378. A

REDUCING TABLE, Slenderella, $55. FR 2-0720. A

KARMIN GHIA, 1960 convertible, low mileage, lite green, $2095. HA 1-2265.

SHOTGUN, J. C. Higgins, 12-gauge, triple choke, ventilated rib site, power pack & case, $50; ping pong table, J. C. Higgins, doubles regulation top, metal legs, $25. FR 8-4574. A

TRAILER, teardrop, sleeps 2, $90. DA 9-2371. A

IRONER, Kenmore, console model, $35. DA 6-1471. A

CABIN CRUISER, 1955, 22', 8' beam, 115 hp Chrysler Crown eng., s/s radio, elect. bail tank & bilge pump, built-in sink & fresh water tank, sleeps 2, fiberglassed, $2200. OS 9-1698. A

BOAT, 18', cabin cruiser, hull ready for installation of deck & cabin, w/plans, $250. PL 1-2463. A

RIFLE, .30-06, cut down stock, $45. FR 5-2789. A

KITTENS, Siamese, blue pt. & seal pt, pedigree papers, $15 & $25. OS 5-1842.

FOR SALE

BOAT, 15', sports runabout, 45 hp Mercury outbd. eng., custom trailer, $850. OS 6-6390. A

WOOFER, 15", 16 ohm, 25 W, w/University crossover, $25. TE 1-5158. A

SPINET PIANO, Hallet & Davis, $475. DA 6-7232. A

CLASSIC CAR PARTS, 1932, model B, orig. radiator grill & rear tire cover, $15. FR 2-1375. A

STEREO TAPE RECORDER, Roberts, 90S & 901 units, portable, $200; camera, Leica, 35 mm, model 3F, w/f-2.0 lens & access., $135; fan, floor-type, 21", 3-spd., GE, $22. GA 4-0384. A

STEREO TAPE DECK, Viking, $59.50; aircraft receiver, AM, LW, SW, $49.50. OR 4-0762. A

REFRIGERATOR, 8 cu. ft., Philco, $80. OS 5-1263. A

AUTO EQUIPMENT for 1956 Thunderbird, continental kit w/brackets, cover, bumper, $75; 5 wire hubcaps, $10. FR 2-4479. A

ACCORDION, 120-bass Cotello, w/case, $250, take over payments, $17.50 mo. OS 5-1022. A

ONE-THIRD INTEREST in 19' lightning class sailboat, fiberglassed, Dacron sails, trailer, race winner, $400. OR 2-8376. A

VACUUM CLEANER, Kenmore, w/attachments, $15. FA 8-0450. A

SWIMMING POOL, child's, 12' dia., 30" high, plastic liner w/steel reinforced wall, cost $79.95; $39. AX 3-5951. A

FURNITURE, large Lawson chair, custom upholstered, $30; 24x48 plank coffee table, $15; electric heater, Trilmont Black heat, $10; brass & parchment drum shade lamps, $7 pr.; pr. solid maple step tables, $10 ea.; white table lamp, $2; bookshelves, $2; end table, tile inserts, $3. PL 7-6973. A

GUITAR, junior-size, w/case, $15. OR 0-6896. A

OSTERIZER BLENDER, $12. OR 7-5080.

FOR SALE OR TRADE

MOTORCYCLE, 1960 Triumph Bonne, $800 or trade for auto. OR 0-2014. M

FOR TRADE

POWERMOWER, reel-type, trade for standard typewriter. OR 2-2370. C

RENTALS OFFERED

HOUSE, 2-bdrm., option to buy, North Redondo area, $115 mo. OS 9-3129. E

APT., 1-bdrm., built-ins, w/w carpet, drapes, 1 mile from Northrop, $80 mo., OS 6-8816. E

RENTALS WANTED

HOUSE, 3-bdrm., have children, $100-$125. OS 6-6994. F

Basketball Season Starts

The question has been asked, why should anyone go to Vic Tanny's for conditioning when it is possible to stay young and trim by enrolling in the NRC basketball program.

In case this strikes a willing note, individual and team entry forms are now available at Personnel Activities, extension 2784.

The basketball season is already under way with practice sessions on Wednesdays from 7 to 10 p.m. and Saturday mornings, 10 a.m. to 12:30 p.m., at Leuzinger High School gym.

Next will be a preseason elimination consolation tournament also to be held at Leuzinger. This will be on Wednesday evenings. Play will begin November 1.

At this point, if anyone still wants to go to Vic Tanny's it's okay.

'RED' LECTURE NEXT WEDNESDAY

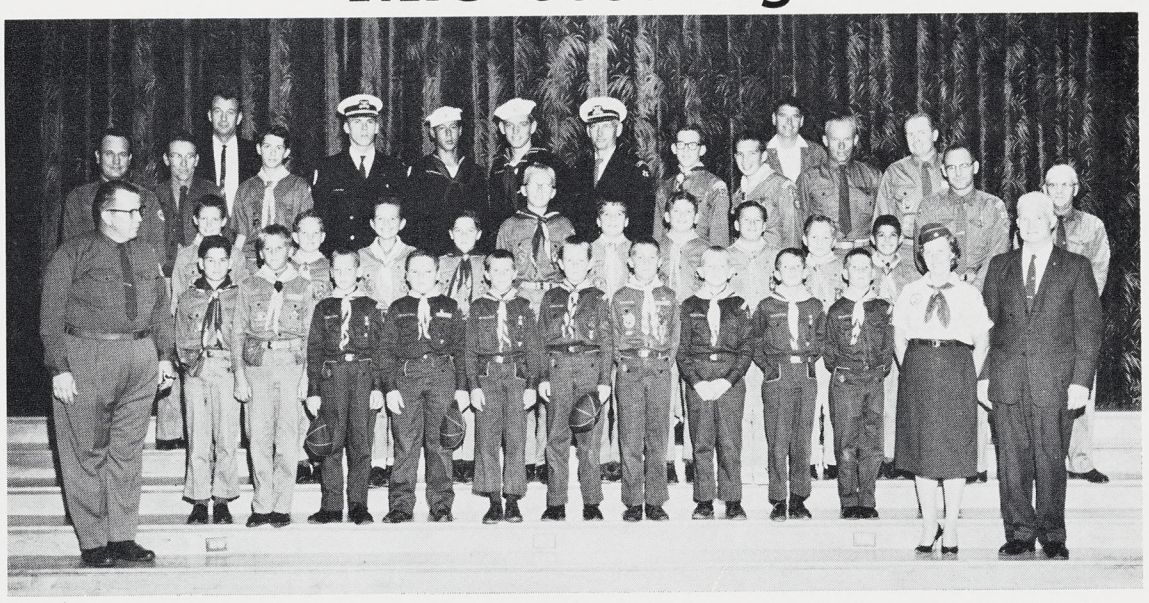
A Northrop Management Club forum, scheduled for Wednesday, October 18, Products Display Building, at 4 p.m., will feature James D. Colbert, vice-president Christian Anti-Communism Crusade, it has been announced by Ed Nolan, president.

Mr. Colbert, just returned from eastern trouble areas will lecture on the situation as it now stands on ten world communist fronts.

All Norair personnel are invited to attend.

NRC VIGNETTE #17

NRC Scouting



NRC SCOUTING—NRC scouting activity, chairmanned by Bill Wareing, is a sustained, outstanding community effort on the part of Norair personnel. The three groups under the Club wing are the Boy Scouts 262, Cub Scouts 262C, and Sea Scouts 262S. Program covers complete range of scouting from one-day outings for the Cubs through summer camps at Arrowhead for the Boy Scouts to seamanship and blue water know-how for the Sea Gulls. Meetings are held regularly and membership extends not only to sons of Norcrafters but to all boys in the community area as well. The activity, which has been under way since Company founding, has produced some of the finest records in Southland history. Norcrafter key figures in the program are at left, front row, Paul White, scoutmaster for the Boy Scouts; Bill Wareing at far right, front row, institutional representative; John Warnick, second row, left, district executive; Rick Frederickson, Cub Scout man, upper right, smiling; and George Larsen, Sea Scout committee chairman, center in blue uniform. All boys, Norcrafters or otherwise, who wish to join these fine builders of citizenship and character have only to attend the meeting that fits their age bracket. The Sea Scouts meet at the Naval Reserve Center; Boy Scouts meet at Ramona School in Hawthorne; Cub Scouts meet at the Clubhouse.

NORCRAFTERS WILL "DO" THE ISLANDS DURING CHRISTMAS

Here is what Norcrafters will do on the Northrop Corporation yearend Hawaiian holiday.

The chartered Pan American DC-7C will leave the Los Angeles International Airport at 10 a.m., December 26, a Tuesday. Meals will be served on board during the flight to the Islands. Scheduled arrival at Honolulu is 5 p.m.

There will be aloha greetings and then a private coach will transport everybody to the famous Waikiki Princess Kaiulani Hotel.

After checking into the rooms, there will be a cocktail party with hors d'oeuvres (natch) and a briefing on tour arrangements for the Island visit. After the cocktail party, everyone is on their own for the evening.

The next day, December 27, will feature a tour of the famous Dole pineapple factory and a monkeypod factory with free time in the afternoon and the evening.

On December 28, Thursday, everyone will see the Kodak Hula Show in the morning on the lawn of the Waikiki Natatorium. In the afternoon there will be a tour of Pearl Harbor plus a boat excursion and a visit to the Arizona.

On Friday, December 29, the big thing will be around-the-Island tour which will include visits to the Buddhist Temple, Upside Down Falls, Nuuanu Pali, papaya and banana plantations, Trader Hall's, Mormon Temple, downtown Honolulu, and the University of Hawaii.

On Saturday, December 30, the group plans to attend the Hawaii Calls Radio broadcast held in the Banyan Court, Moana Hotel.

December 31, there will be free time to shop, sun bathe, and watch life in the Islands.

Monday, January 1, the group will depart from Honolulu at 9 a.m. Arrival at LAX is scheduled for 8 p.m. that evening.

NRC Good Time Table for October

For enrollment or information on activities listed below, call or contact Personnel Activities, Plant One, extension 2784. All clubs meet at the NRC Clubhouse unless otherwise noted.

ART CLUB, Stewart Luce
Meets Thursdays, 7-10 p.m., at Joe Kalina's Studio, 3234 W. 157th St., Gardena.

BALLROOM DANCE CLASS, Wes Williams
Two classes 7-8:30 p.m. and 8:30-10 p.m., every Thursday. Newcomers welcome to visit and enroll. Fun party October 26, 8 p.m.

BASKETBALL, Bill Greene
Start forming team now. Entry forms at P.A. Leuzinger gym available every Wednesday, 7-10 p.m. & Saturday, 10:30-12:30 for practice sessions.

BIBLE STUDY, C. J. McGuire
Plant I—Daily, 11:30-12:15, Tool Design Bldg. 11-11:45, 5566 Conference Room. Plant II—Mondays & Thursdays, 12-12:45, Conference Room 2, Engineering Center—Daily 12-12:45, Reliability Conference Room.

BOWLING, Earl Saunders
Winter Leagues rolling. Substitutes needed.

BOY SCOUTS, Bill Wareing
Sea Scouts meet Tuesdays, 7:30 p.m., at Naval Reserve Center in Hawthorne. Cub Scouts meet 4th Friday, 7:30 p.m. Boy Scouts meet Thursdays, 7:30 p.m. at Ramona School in Hawthorne.

CAMERA CLUB (days), Howard Butler
Meets 3rd Wednesday, 7:30 p.m.

CAMPING CLUB, Fred Armstrong
Hurkey Creek Outing 7 & 8. Obtain directions and details at P.A.

CHESS CLUB, Loy Bennett
Noontime activity.

GEM AND MINERAL CLUB (days) Dan Kozlow
Special meeting October 11, 7:30 p.m. Mr. Boblett will be guest speaker.

GEM AND MINERAL CLUB (nights) Doyle Shook
Meets 1st Wednesday, 1 p.m. at 432 York Ave., Hawthorne.

GOLF, Ken Clayton
Baldwin & Fox Hills, October 14 and 21, 18 hole tourney. Cost $5.50. Singing Hills, November 4 and 5, 36 hole tournament.

MIXED CHORUS, Ron Henderson
Meets October 17, 24, and 31.

MODEL RAILROAD, Jack Wilson
Meets Thursdays, 7-10 p.m. Visitors welcome.

RADIO CLUB, Paul Serafin
Meets last Thursday, 7:30 p.m. Radio code class meets Tuesdays, Wednesdays, Thursdays, 7:30 p.m. NRC's station is W6VPZ.

RIDING CLUB, Joe Black
Trail ride October 15, 2:30 p.m. at T & L Stables, 2642 River Ave., South San Gabriel. Horses $1 an hour. Meeting October 29, 4 p.m.

SKEET CLUB, Bob Bagby
To resume shooting in January 1962.

SKI CLUB
Watch for special announcement.

SKIN DIVING, Chuck Roth
Meets 3rd Monday, at 7:30 p.m.

SOFTBALL, Mac McConnell

SPORTS CAR CLUB, Paul Ankeny
Meets 2nd Monday, 7:30 p.m. European race driver, Lew Spencer, will be guest speaker. In addition, Morgan SS and AC Bristol action movies will be shown.

SQUARE DANCING, George Sanborn
Dance every Friday, 8-11 p.m., Ralph Hill's Hall, 15701 South Crenshaw Blvd., Gardena.

SURF FISHING, John Pawlicki
Meets 1st Tuesday, 7:30 p.m. Field trip Saturday, October 21, 6-9 p.m. at Torrance Beach.

ORGAN CLUB, Gail Skinner
Watch for concert.

TENNIS, John Potts
Free instruction and ladder matches, Saturdays, 10 a.m., at El Camino Jr. College.

TOASTMASTERS 212
Meet at Cockatoo Inn, Thursdays, 6:30 p.m.

TRAVEL CLUB, Howard Cornelius
Yearend Hawaiian Holiday cost—$258 each. Brochures and traveletters at P.A.

FOR THE LADIES

BOWLING, Corinne Davis
Winter Leagues now rolling. Substitutes needed.

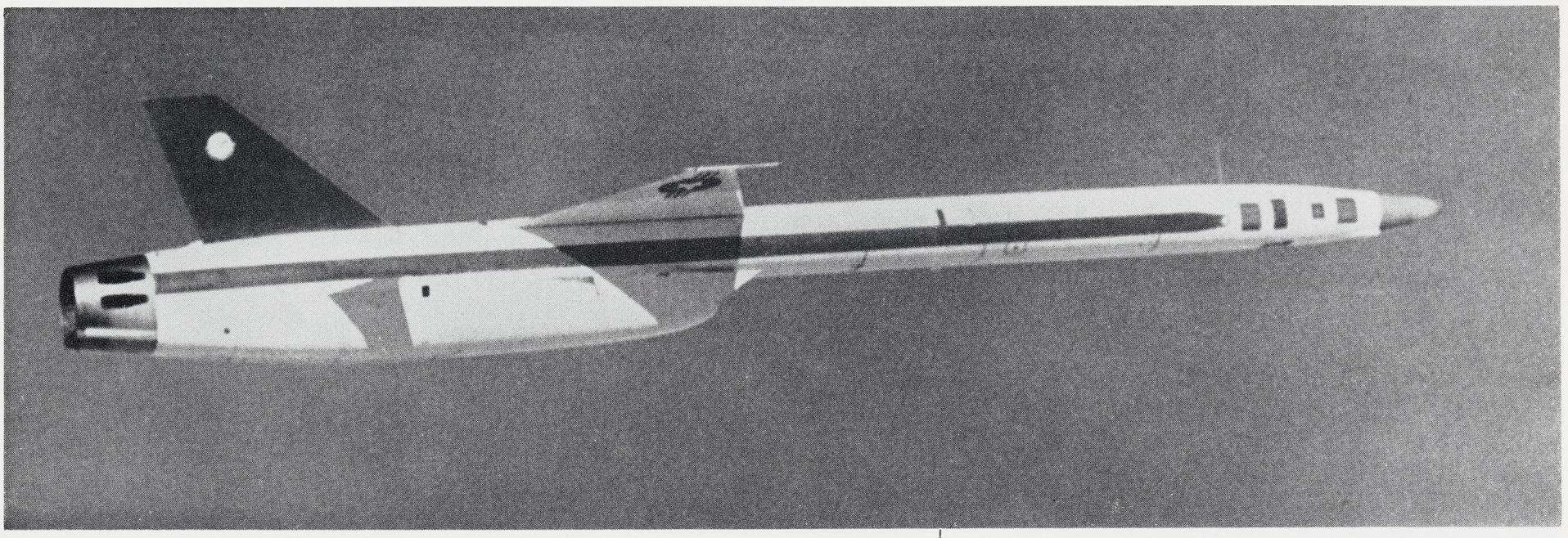
GIRL SCOUTS
Mariners, Tuesdays, 7 p.m., Naval Reserve Center, 201 West 126th Street, Hawthorne. Ages 13-18. All Norcrafter girls welcome.

KNITTING, Vera de Villers
Meets Thursdays, 7:30 p.m. at 6447 W. 87th St., Los Angeles 45. Free instruction each meeting.

SPECIAL FAMILY EVENTS

OLD FASHION PICNIC—Sunday, October 22, at South Gate Park. Fun, games and surprises! Watch for details.

YEAREND HAWAIIAN HOLIDAY—December 26—January 1, 1962. Cost: $258 each. Brochures and NRC Traveletters at P.A.



THE Q-4B—This is Northrop-Radioplane's supersonic target drone, the Q-4B shown in its dedicated role as simulated aggressor bomber. Photo was taken in actual flight. Q-4B and its Mach 2 speed is target for Talos missile in U.S. Navy flight test program at Holloman.

No Damage Done

MISSION COMPLETED—What happens when radar control brings a Q-4B back to earth? Nothing much. Parachute is automatically deployed, impact bags are automatically inflated, and much of landing shock is nullified. With minimum repairs and a checkout, drone will be ready for another run before the Talos. Radioplane's system recovery know-how also brings American astronauts safely back from space shots.

Shake Hands—

CHUCK MYERS — Newest test pilot to join forces with Norair is Charles Edward Myers, jr. who is now helping put production T-38s through paces at Palmdale. He comes with 18 years flying experience; U.S. Army, U.S. Navy, and Convair-San Diego. One of his assignments was project pilot on the "Pogo-Stick". Just prior to Norair, he was chief engineering pilot, F-106, at Edwards.

Sparky and Friends

OUR MAN IN SEATTLE—Warren "Sparky" Sparks, Norair representative to Boeing Company, returns with his sons from a bountiful day on Washington waters loaded down with salmon like you never saw before. Meanwhile, that young Sparks, second from left, needs help.

LFC POWERPLANT SCHOOL—Laminar Flow Control personnel are being schooled by GE engineers in details of the GE J79-GE-13 engine, two of which will be used as main propulsion system in the long range aircraft. From left are John Bennington and Ralph McCreadie, GE instructors; Russ Dearborn, Robert Kaminsky, Clyde Walker, Roy Whites, Floyd Mason, William Rhodes, Floyd Rosser and Odean Wesland.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, October 25, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

"JACKIE" SETS TWO MORE RECORDS

OLD MARK FALLS, NEW ONE ESTABLISHED AS TALON IS PUSHED INTO STRATOSPHERE

Jacqueline Cochran has piloted a T-38 Talon supersonic jet trainer to two women's world altitude records.

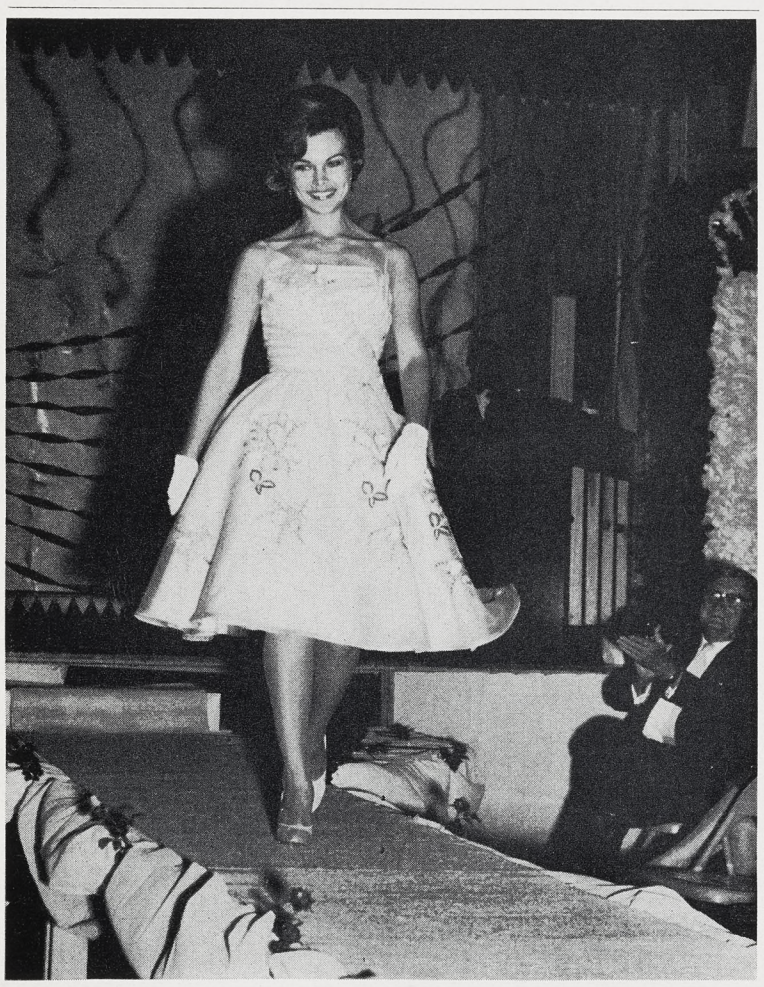
Miss Cochran blasted the T-38 to 56,071 feet to surpass her own eight-year-old world record of 47,169 feet for peak altitude by 8902 feet.

Under the National Aeronautics Association's brand new rules for a sustained altitude record, Miss Cochran also flew the T-38 to an altitude of 55,253 feet and held it there for 90 seconds, accelerating her airspeed until the end of the run. She thus became the first person ever to set a world's record for sustained altitude under NAA rules.

Since August 24, Miss Cochran has returned four French-held records to the United States, smashed three of her own world marks, and for good measure established a record in a new category created by the National Aeronautics Association. All records were set in the Talon, and were sponsored by Northrop.

In six record-breaking weeks, Miss Cochran has officially exceeded the T-38's guaranteed performance specifications in speed, distance and altitude. Her top speed of Mach 1.35 was well above the speed of Mach 1.2 guaranteed for the airplane. A flight between Palmdale, California, and Minneapolis, Minnesota, stretched the Talon's guaranteed range by more than 300 miles. Thursday's altitude leap topped the Talon's guaranteed altitude by almost 2000 feet.

A TIME FOR CONGRATULATIONS — Second Lieutenant Raymond Vos, left, is the first Randolph AFB student to fly solo in the T-38 Talon. Here with the flight over he receives happy congratulations from his instructor Lieutenant H. D. Dible. Lieutenant Vos had 12 and a half hours dual time before he took the lady aloft alone. Three other students soloed on the same day for an important Talon milestone. (See News Brief.)



MISS FLAME—Rapid City Norcrafter Lillian Disharoon, organization clerk in Weapons System group, was chosen "Miss Flame" in conjunction with National Fire Prevention Week at Ellsworth Air Force Base. Lillian won out over 12 other also very pretty girls entered from Air Force groups and missile contractors. At right, applauding heartily is Ellsworth Fire Chief Bartley J. Tillotson.

Savings Bonds for Machinist Referrals

Due to a critical need in production machine shops for personnel experienced in short run —close tolerance machine work, the Northrop-Norair Employment Referral Award Plan is being reactivated for certain machine shop classifications, it has been announced by Dave Stadler, chief, Norair Personnel. Norcrafters of all Divisions are invited to participate.

Employment classifications eligible for referral awards are as follows:

Milling machine machinist

Milling machine operator — senior

Duplicating and profiling machine machinist

Duplicating and profiling machine operator—senior

The Employment Referral Award Plan gives a $100 United States Savings Bond award to each Norcrafter referring an applicant who is not presently employed by the Company to the Norair main employment office, Industrial Relations Building, Plant 1. Applicants referred must be hired in one of the eligible classifications and remain in full-time employment for a period of at least 90 calendar days.

Referred applicants are requested to present a Referral Award Card at the time they apply for employment.

Referral Award Cards are available at employment offices.

TRICK OR TREAT IN VOGUE AT CAFETERIAS

Norair cafeterias are about to surprise the patrons, it is revealed by Fred Wolfe, chief, Cafeteria.

"Halloween is coming up," states Freddy, "and this is a sort of do-it-yourself trick or treat. On October 30 and 31, as Norcrafters go down the line, the bell will ring just as it will at home when the kids come by, except in this case the treat goes to the lucky Norcrafter who is standing at the register at the time."

The cafeteria trick or treat will be in vogue at all lunch periods. For the night shift, Plant One only, the trick or treat bonus will happen on Friday, October 27 and Monday, October 30.

NEWS BRIEFS

MILESTONE—A very important milestone was achieved at Randolph AFB, Wednesday, 11 October, as the first student soloed in the T-38. Second Lieutenant Raymond Vos, 23 years old of Sharon, Iowa, had only 12½ hours dual prior to his solo flight. His previous flying training experience consisted of 140 hours in the T-37 at Webb AFB. His instructor was First Lieutenant H. D. Dible. Three other students, Captain C. A. Anderson, former SAC navigator; Second Lieutenant G. E. Flynn; and Second Lieutenant R. L. Zapotacky also soloed the same day. Average T-38 dual time for the group before soloing was 13 hours . . . The following day, 12 October, two additional students performed their solo, Second Lieutenant A. L. Rennick and Second Lieutenant A. L. Burton . . . Also Lieutenant Colonel Victor Mahr, Instructor Pilot Instrument School commander, had his first flight in the Talon. Colonel Mahr is a former Scorpion squadron commander.

RADIOPLANE AND PALEONTOLOGY—Excavations at Radioplane Division's new Conejo Valley facility have turned up a fossil deposit which will add to man's knowledge of prehistoric times. A giant skull, palatal bones, and tusks measuring 10 inches in diameter, have been tentatively identified as those of a specie of Imperial Mammoth which roamed this area during the Quaternary, perhaps 15,000 years ago in time. Many other ancient bones are being uncovered. Dr. Theodore Downs, curator, Vertebrate Paleontology, and acting chief curator, Division of Earth Sciences, Los Angeles County Museum, is studying the find.

Norcrafters to Present Concepts at Q-C Meeting

Norcrafters are slated for important contributions to aerospace industry methods during the upcoming Eleventh Annual Conference of the Aircraft and Missile Division of the American Society for Quality Control.

Date of the meeting, which will be held at the Ambassador Hotel, is November 9-10.

Conference General Chairman is E. C. Bennett, chief, Quality Control Engineering; secretary is Jack Apodaca, Quality Control Budget analyst.

Host at the opening session, November 9 at 9:30 a.m., will be Dr. William E. Cox, Norair chief, Engineering Reliability.

That afternoon, 3:30 to 4:30, Robert S. Catlin, manager, Quality Control, will moderate Session A on the subject "Integrity Versus Low Bidder."

On Friday, Jack Mannion, assistant to Norair General Manager, will moderate the opening session on "Levels of Essentiality." Time will be 10:45 to 11:45.

Also during this period, Dan O'Halloran, chief, Quality Control, and Eduardo Regalado, general supervisor, Process Control, will be speakers at the session on "Nondestructive Testing."

Nortronics Norcrafter Dr. Lynd Esch, supervisor, Human Factor Engineering, will speak Friday afternoon on "Personnel Subsystem Reliability."

LUNAR BEACHHEAD

(See pages 2 and 3)

LUNAR BEACHHEAD

The moon. Satellite of mystery.

Where did it come from? How did it get there? What is it made of? What does the other side look like? Can we ever use it? Does Norair play a part in the nation's lunar programs?

Since time began, man has pondered the riddle of the moon and has, in the process, been bewitched by her wan and golden beauty.

And during the long centuries, this preoccupation has borne fruit in many knowledgeable hypothesis to the lunar unknown.

By Aerospace Reporter

In the beginning it was thought the moon was the wife of the sun. Today, we know it is somehow a daughter or a smaller sister of the earth.

Where did the moon come from? This question involves the beginnings and the evolution of the solar system.

We speak not of *the* beginning, only the beginning of our own environment.

BILLIONS OF YEARS

Science tells us that it all started in the dim billions of years ago in time as wild isotopes of hydrogen mutated to form the elements. The lighthearted one electron, one proton hydrogen was probably first. Nature proceeded on down the list to and through the great and sombre heavies such as uranium (92 electrons and 92 protons) with the many others, such as iron, oxygen, gold, lead, calcium, in between. There are one hundred and two in all, with space on the chart for one more.

These elements through atomic and molecular processes became the sun which was the nucleus, the first physical beginnings, of our solar system. First a cloud of gas, then a cloud of solid particles, then through forces of attraction, larger particles until there was mass, a large uneasy body. This, in utter simplification, was the sun.

". . . The moon, a chill and friendless thing,
Passes and writes her will upon the tide . . ."
—KEATS

And the sun became one day a launching pad where heat and nuclear explosions sent pieces of it into orbit about itself. The earth was one of these pieces. Our sister planets were also born this way. We are about 5 billion years old, or young.

This is where we are now, peacefully orbiting the sun. Once each year we make the orbit, a journey of 584 million miles. We spin as we orbit. We spin or rotate on our north-south pole axis once each day and night.

Now the moon could have been included in this heave of solar diastrophism. Just how and in what form is presently uncertain. As we are a satellite of the sun, the moon is a satellite to us. It orbits about the earth, following obediently in our endless elliptical flight through the solar system.

Some scientists say that the earth and the moon were launched from the sun together but separate.

Others contend that the earth was launched into orbit from the sun alone, then the earth in a moment of pain, became its own launching pad and launched a great chunk of itself, the moon, into orbit.

These theories and many more, men still ponder. More complete answers as to our system beginnings will be with us in a very few years if, when men first land on the moon, they are given the logic to properly fit the pieces of evidence into the picture of the whole.

The theory of mutation from hydrogen is a very firm one. "An excellent platform on which to build our history," say the scientists.

So much for beginnings.

What is the moon made of?

CARBON—?

Curiously enough, we have more definite information about the composition of the sun and some of the far stars than the moon. This is due to the lack of fire and flame, so to speak. Where spectrometers can observe elemental light bands in the fires of the sun, no such help is given by the moon. ". . . a chill and friendless thing . . ."

Only one chemical has apparently been seen. This is carbon (C_2 at 4735, 4713, and 4696 angstrom units; comet spectra between 3950-4100 angstrom units) observed above the crater Alphonsus.

We can infer as to general composition however. The moon has less density than the earth. Telescopes and photographs tell us the moon's surface is made mainly of rock. This gives rise to at least two rationalizations. The moon could be deficient in iron or it could have been more selective, having an iron core but an excess of light rocks such as granites, syenites, and pegmatites or their volcanic (extrusive) counterparts, fewer diorites, peridotites, and gabbros.

Some say we will find a layer of stardust on the moon. Indications are that the moon has ice in her shaded areas and caves.

What does the other side of the moon look like?

The Russians have taken photographs. The other side is more of this side, mountains, craters, great dry seas (maria).

CAN WE USE—?

The utilitarian question — can we use the moon?

Yes. Definitely. Moon use presents possibilities fantastic in their implications.

It will be the finest and the biggest communications tower man has ever known. Television programs beamed to the moon and back or originating there, could reach any home on the earth. Weather information would be a continuous picture in all world centers of transportation.

It will be the most important stepping stone, (halfway house) to our sister planets. One thousand earthly pounds weigh only 166 pounds on the moon. It will also serve as a training and staging area for interplanetary voyage.

It will be a super-super Palomar. Surface details on Mars will be revealed at long last to the astronomers of the world. Perhaps, say some, moon observations might help us join the curves of time. Almost certainly galaxial relationships will be established. Even the length of our journey into the infinite and our destination, already 5 billion years on the road, might be proved and mentally prepared for.

RIDDLE OF LIFE

Biology and medicine on the moon will look for evidence to help answer the riddle of life.

Geologists, geophysicists, will look about the surface of the moon, study her interior, and learn more about the question of earthly beginnings.

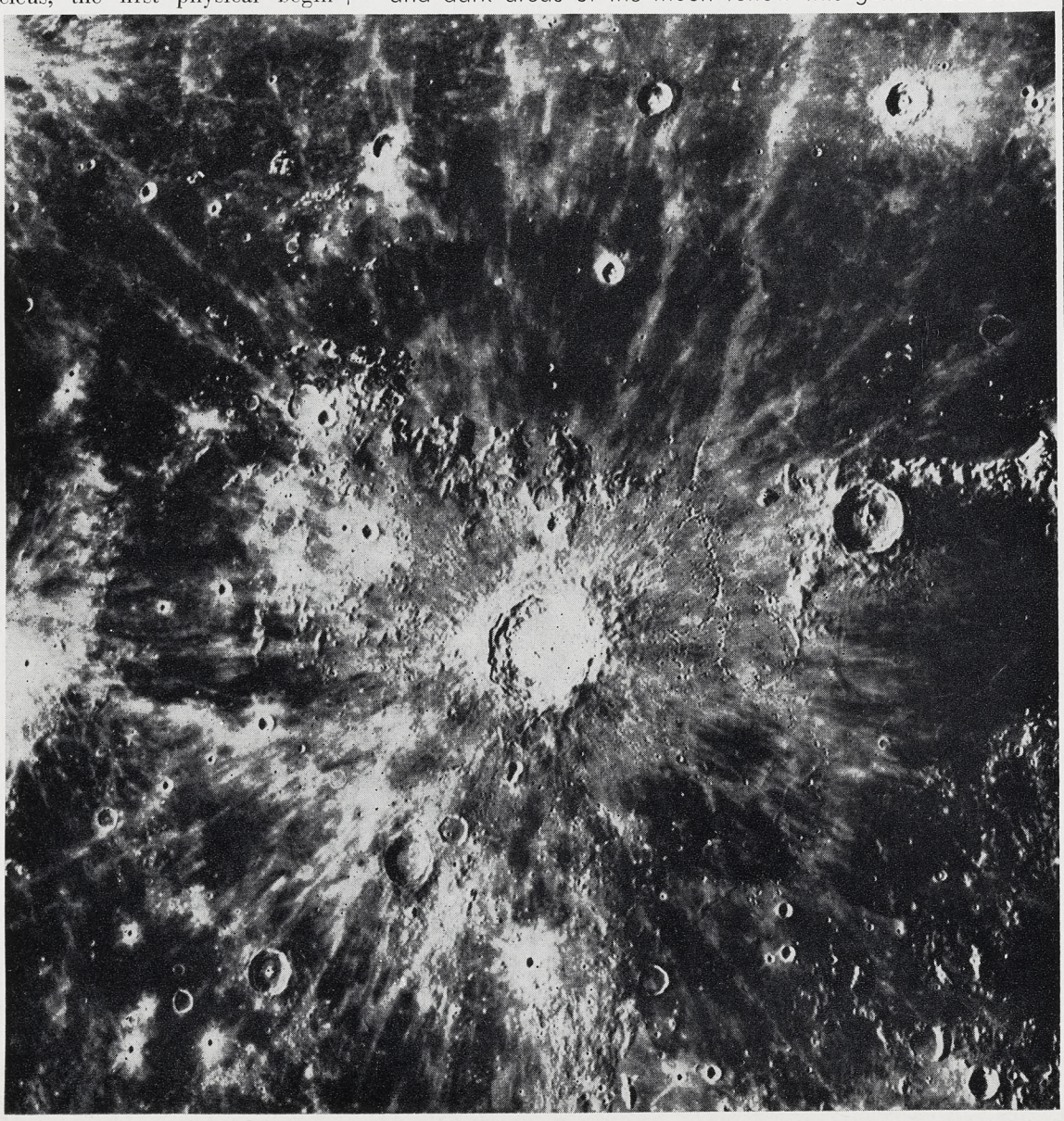
The moon is generally thought to be a giant laboratory, undisturbed by wind or rain or the organic forces of living things. However, if life did once exist on the moon we might then explain the mysterious rise, decline and fall of our own systems. With such a history we well might assure an endless rule of our own species.

White rays, as if the moon had been splattered, are a feature of the lunar surface. Could be pegmatites, say some. Five miles wide. Here on earth our small pegmatites produce rubies and emeralds, and more importantly beryllium and scandium, elements of high importance to nuclear work.

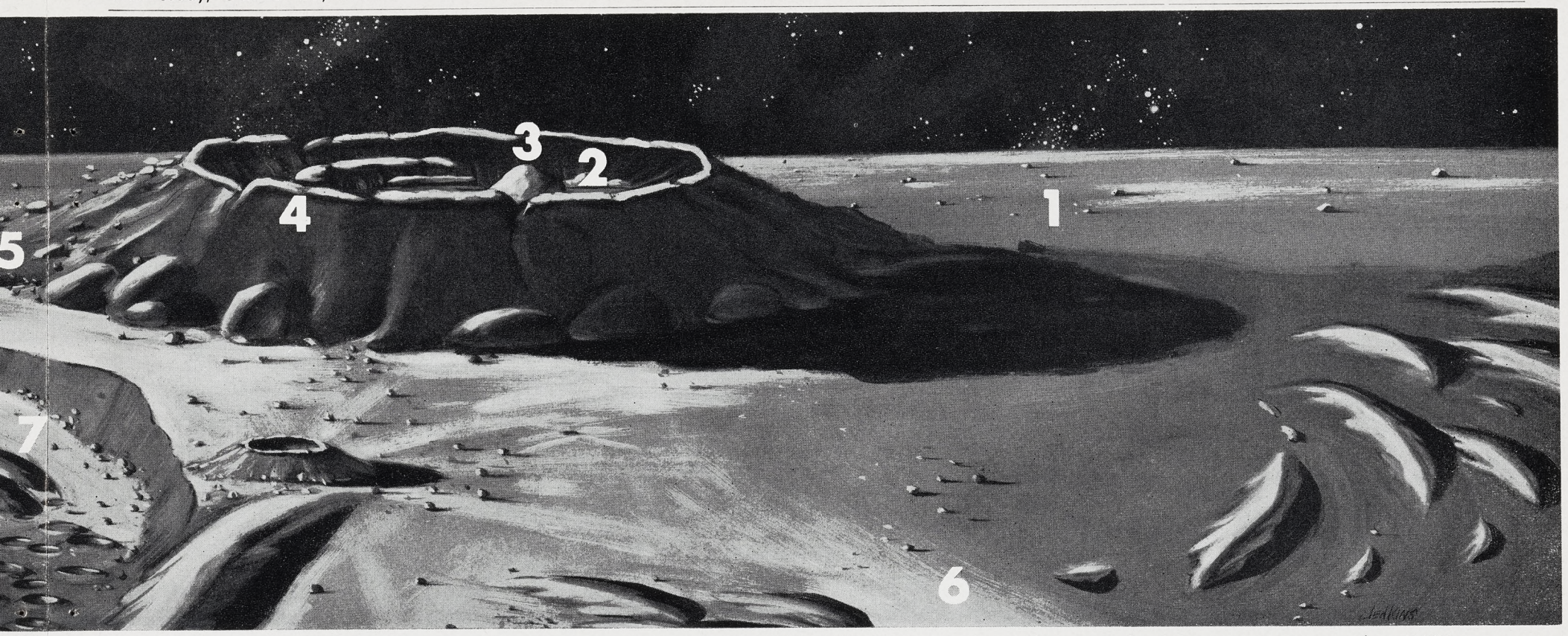
War?

Yes, uncomfortable as the prospect might be, the moon presents great military advantages if control should be vested in designing hands. The moon could be a giant missile base, an observation post, a deterrent, or nuclear sword of Damocles. And by the same token, the moon makes a

WHAT IS THE MOON MADE OF—This question man must answer. Here Physicist Berlot and Lunar Geologist Dr. Azmon illustrate the problem. Black rocks here on earth are of the heavier basic types such as basalt. Light rocks are acidic, such as granites and syenites. Do the light and dark areas of the moon follow this generalization?



MAGIC OF PHOTOGRAPHY—Moon's surface is brought surprisingly near by modern telescopic photography. Great crater, center, is Copernicus, fifty miles from rim to rim. Plainly seen are mysterious rays converging on Copernicus. Another feature of intense scientific interest is the center peak characteristic of many craters. Note faint crater just to the right of Copernicus. Its condition could testify to at least three separate periods of time in development of lunar landscape, (1) before the crater was there; (2) emergence of the crater; (3) its destruction by Copernicus. Norcrafter readers are invited to ponder this photograph and apply their logic to evidence they see. Shore of Mare Imbrium (Sea of Rains) is at top of photo. Mare Nubium (Clouds) starts at bottom.



TO LEARN THE MOST—To learn the most about lunar environment when NASA vehicles now in project are rocketed there, Norair Planetary Physics and Chemistry Lab advocates strategic sampling and analysis of material from the various features. Small amounts one to ten grams—half a teaspoon full—would serve the minimum. (1) From the Mare (sea); (2) the floor of a major crater, in this case Keppler, 25 miles across; (3) from a peak in the center of a crater; (4) from the walls of a crater; (5) from the rubble at the edge of a crater; (6) from a ray; (7) from the floor of an older crater; (8) from a smaller crater. Scientists cannot apply the usual vocabulary to lunar features. Geological processes are not known. Not one element has been identified beyond doubt. This drawing is Norair artist's concept of Keppler crater. Both Keppler and Copernicus are being studied as landing sites. Manned moon shots will probably head for the center of a crater because of the inherent shelter there.

fine target for a well-aimed atomic bomb-packed spaceship.

And the part Norair will play in this exciting adventure to a new horizon?

The Division has undertaken serious and vital work in American lunar programs. A large share of the responsibility, especially in the areas of deep science, theory, applied research and interpretation of the growing state of lunar arts, rests within the Planetary Physics and Chemistry Lab, a part of the Astro Sciences group, N. V. Petersen, chief.

Norair scientists working directly on the program are Robert R. Berlot, who heads the Planetary Physics and Chemistry Lab, and Dr. Emanuel Azmon, lunar geologist.

Mr. Berlot specializes in physics and geophysical aspects. Dr. Azmon specializes in space materials, composition and features.

Consultant to Norair on lunar projects is Dr. George Kennedy, professor, Institute of Geophysics, UCLA. Dr. Kennedy is the world's foremost authority on phase transitions, nature's process where pressure and temperature combine to change molecules from one substance to another. Sandstone to schist to igneous rocks; limestone to marble to diorite; mud to shale to slate to gabbro.

INSTRUMENTATION

Norair's Planetary Physics and Chemistry Lab is dedicated to scientific investigation leading to more complete understanding of space geophysics, geochemistry, geological phenomenon, and to theoretical and experimental space research.

They are working hard on development of instrumentation requirements for space vehicles, and are devising study procedures for space natural resources in order that such resources may be used by voyagers.

"The moon will be no vacation spot for tourists," says Mr. Berlot. "Survival there will depend on how well we can protect from the hostile environment. Vacuum instead of an atmosphere, radiation, burning sunlight, deep freeze temperatures, lack of oxygen, lack of water, lack of food, rough terrain, are challenges that we must overcome before man can hope to survive there."

CAPABILITY

A project now underway in the lab consists of building a pressure test vessel that duplicates geologic conditions that were instrumental in forming the earth, the moon, the sun, and the planets. This equipment will do work in the area of Dr. Kennedy's studies in molecular crystallographic change.

Capability of 100,000 atmospheres will be required and temperature ranges from 2 to 1500 K. One hundred thousand atmospheres is equal to approximately 1,500,000 pounds pressure per square inch. In temperatures 2K is minus 254 F. 1500 K is 2500 F.

Phase transition research will add to man's knowledge of geological and geophysical processes in mountain building, folding, faulting, diastrophic disturbances. Such information is sought in proving lunar and planet origins, their present geologic age and state. Test results will aid immeasurably in the development of instrumentation concepts and will help interpret information returned to earth from preliminary lunar and space shots.

Another area where man's lunar knowledge is lacking is whether or not a magnetic field similar to the earth's own is present on the moon. How will astronauts find their way, navigate, on the moon? Will compasses serve, or must some other device be developed?

In anticipation of this problem, Norair scientists from the Planetary Physics and Chemistry Lab suggest planting on the moon at the earliest opportunity a triangulation system for the purpose of navigation. With such a system, commonly used here on earth, space vehicles could return to precisely the same spot time after time, could locate other features reliably, could conduct reference surveys. With additional refinements, the system is also intended for control use by orbiting satellite stations. Use from the surface of the earth as a beacon or homing system is an additional possibility.

Mathematical evidence that ice exists in caves in shaded areas of the moon has been recently advanced by Dr. Harrison Brown, professor, Geochemistry, and Drs. Bruce Murray and K. Watson, research fellows in Space Sciences, all of the California Institute of Technology. This prospect is being interpreted in terms of astronaut survival by Mr. Berlot and Dr. Azmon.

What are the moon rays? The aforementioned mysterious pegmatite-like white "splatter" marks that trace much of the moon's surface and center on certain craters is a subject of instrument concept.

WE NEED TO KNOW

"We need to know what kind of rocks make up the moon. Are they the acid or granitic types, or are they basic gabbro types?" states Dr. Azmon. "White or light rocks here on earth mean granitic types. Dark rocks mean gabbros. With light rocks there remains a possibility that water molecules would be contained, steam in case of volcanic eruption. Gabbros lessen this possibility."

A visit to Norair's "moon lab" is in fact a journey to another world. Rock samples of all descriptions, sands, dust, lab equipment, photographs of the moon's surface, rub elbows with textbooks, science journals, slide rules, graph paper, and formula covered blackboards.

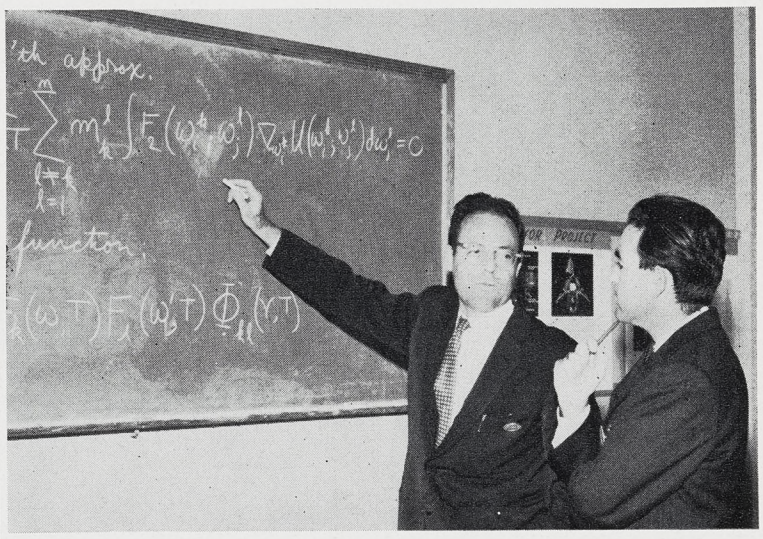
Scientists R. R. Berlot and Dr. Azmon work quietly and with assurance born of knowledge and truth.

They are cautious men, acutely aware of their responsibilities

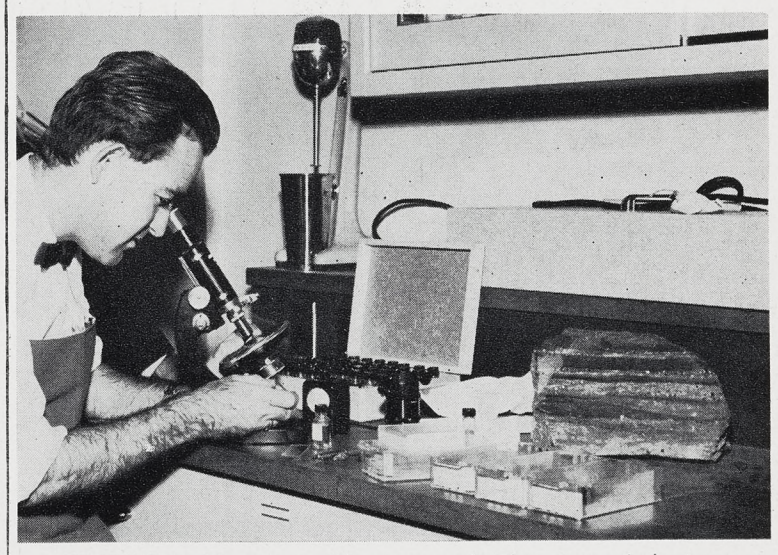
The fanciful, the exaggerate, the speculate, and half answers get short shrift in their laboratory.

They are dedicated to science, and the hallmark of science is truth.

On sober reflection, could anything but scientific truth withstand the thundering significance of a successful lunar beachhead?



SPACE PHYSICS—Norair Scientists Robert Berlot and Dr. Emanuel Azmon study equations on phase transitions, one of the research areas where a complete understanding will help assure success of the nation's lunar projects. Phase transition is nature's process of molecular change under influence of temperature and pressure. Logical application of the physical sciences will tell us what to expect of lunar terrain before man is committed to a landing there.



RESEARCH—Planetary Physics and Chemistry Lab is a world apart. Specimens of practically all known world rocks and minerals, many varieties of sand, dust, meteor particles are being studied. Scientists have very little to go on to establish relationships. Temperature factors are known. During the two-week lunar day the thermometer rises to 214° F. During the two-week night it sinks to minus 250°. Overall specific gravity of the orb is also known, it is in the area of 3.2. Phase transition processes will add another knowledge tool to man's meager store of lunar research implements.

Northrop-Norair News

VOL. 19 No. 23

1001 E. Broadway, Hawthorne, Calif.
A NORTHROP CORPORATION PUBLICATION
Published every other Wednesday
NORAIR DIVISION

CHARLES BRADFORD, Editor

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Not Later Than You Think, Says NRC Casaba Comish

By Bill Greene

Now is the time to get those spring-soled shoes out of the closet and sharpen up the reflexes. The NRC basketball program will soon be under way.

All that is needed for a man to join a team is go to the Leuzinger High School boy's gym any Wednesday evening, or Leuzinger girl's gym any Saturday morning and make known your presence. Better yet, form your own complete team with men who work in or near your organization.

We will tip off the program with a preseason tournament starting November 8. Winners will receive tickets to an outstanding college football game.

Following the tournament, we will have intra-company league play. The league will begin November 29 and there is room for everyone. A spare tire or few years shouldn't stop anyone. Many league members are in the 30 to 40 age bracket. And there is no such thing as over the hill for an NRC sponsored basketball league. Believe us, there is a spot for every man and we need players in order to round out our league. Winners will receive individual trophies.

After the league, we will have our postseason tournament which will give all teams another crack at winning.

On the basis of play in the preseason tournament, league play, and postseason tournament, two all-star teams will be chosen and will enter into the West Los Angeles Industrial Tournament.

Anyone who is employed at Norair and Nortronics ES&E is eligible to participate. Also, all men who have wives employed at Norair or Nortronics ES&E are eligible. So ladies, ask your husbands if they want to enjoy some vigorous exercise in a good competitive league.

BILL GREENE gives basketball chalk talk.

The best way to get acquainted and win friends is to play in our sports program. So enroll now. All equipment will be furnished except personal equipment like shoes and uniforms. There is no entry fee.

See you on the hardwood.

T-2 Site Elects

RAPID CITY—Virge Maniago reports that T-2 site Norcrafters elected Jack Mercer, Contract Services group to chairmanship of Recreation Committee, to follow R. G. "Doc" Cook, left, who extends congratulations. Jack has long missile career. He was one of the first at Cape Canaveral, arriving in 1950, to work with Corps of Engineers in setting up blockhouses and launch pads for the Snark.

Toastmasters to Vie for Honors In Humor Trials

Northrop Toastmasters Club 212 will be represented at the area humorous speech contest by Club Administrative Vice-president W. H. Justice, it is announced by Walt Darby, Norair commissioner.

Bill, who is an engineer with Norair's Computing and Datamation Services, defeated three other finalists for the privilege at last Thursday's meeting at the Cockatoo.

At the same meeting, the biggest liar of the Club was determined to be Joe Shiner when he told a tall tale of being caught by a surf fisherman while skindiving.

The meeting also served to install officers with Dr. Robert Seaman, educational lieutenant governor of District 50 Toastmasters International, doing the honors.

President is Cliff Lillo; Maurice Burdette, educational vice-president; Walt Darby, program chairman and Toastmaster commissioner; W. H. Justice, administrative vice-president; John Grutzik, secretary.

TWO FOURSOMES OPEN IN NRC SINGING HILLS

There are openings for two foursomes in the much heralded Singing Hills golf tournament, it is announced by Ken Clayton, NRC Golf commissioner.

Singing Hills fray will be held at El Cajon, November 4 and 5. It is a 36-hole tournament and bids to be the biggest tee session of the year.

RIDES WANTED

7 a.m. — 3:45 p.m.

WESTERN AVE. & 247TH ST., Lomita. J. D. Smith, ext. 1820, DA 5-2280. 2

RIDES OFFERED

7:30 a.m. — 4:15 p.m.

IMPERIAL HWY. & STUDEBAKER RD., Norwalk. George Nosacka, ext. 788, UN 4-7673. 13

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

END TABLES, 2, pie-shaped, 3-legged, walnut, $5. PL 4-4384. A

HOME, 2-yrs.-old, 3-bdrm., 1¾ bath, carpeting, custom drapes, intercom & radio, 2-car garage, large bricked patio w/hvy. fiberglass roof, professionally landscaped, block wall fence, 5 miles from Northrop, $31,950. DA 9-9180. A

RADIO - PHONOGRAPH, console, Westinghouse, AM-FM, $35. DA 6-7232. A

HOUSEHOLD FURNISHINGS, elec. range, $50; refrigerator, 9' Coldspot. $25. DA 4-8586. A

HEADBOARD, pink-stained, chest, 4-dwr., vanity & mirror, $40. OS 6-5873. A

POWER MOWER, 21", Craftsman, $40. FR 2-0149. A

LUGGAGE, lady's, 3-pc. Samsonite, make-up case, overnight, pullman w/hangers, royal blue w/white trim, $50. OR 7-9498. A

BATTERY CHARGER, 6-12 v., $15; aluminum shower, $10; 8 doors w/hardware, $2 ea.; galvanized pipe, ½", 8¢ a foot; ¾", 10¢; 1", 15¢; 1½", 24¢; 7 iron T posts, 50¢ ea.; 2x4's, 1¢ a foot; ⅜"x4'x8' plywood, $1 ea.; stove, oil-type, heating. $10. VE 7-4237. A

ELECTRIC TRAIN, HO Tyco model, 5'x8' layout board, 40' track, transformer & switches, $37.50; Go-Kart, 4 hp eng., $45. OS 6-6390. A

BLOODHOUND, AKC regist., male, tawny color, 1-yr.-old, $100. FR 5-2920. A

FORD COUPE, 1936, good tires, new hydraulic brakes, eng. needs work, $50. FR 7-3487. A

HOUSE, 3-bdrm., 2-bath, in Torrance, R-3 lot, 6'x150', scenic view, low down pymt., 1-yr.-old, $24,900. DA 5-2851. A

BOX TRAILER, 4'x7'; license, lites, $35. PL 5-7411. A

REFRIGERATOR, 10½ cu. ft. Kelvinator. $80. OR 8-5506. A

LAUNDRY TUB, w/fittings & swing faucet, $10. PL 4-1964. A

GAS RANGE, O'Keefe & Merrit, deluxe model, $85; refrigerator, Philco, late model, $85; dinette set, wrought iron, $30. FA 8-2878. A

FOR SALE

BICYCLE, girl's, 26", Schwinn, $20; glad iron, Thor, $15; Pontiac, 1952, 4-dr., r/h, new tires, seat covers, brakes, $225. OS 5-1818. A

GO-KART, 2½ hp Clinton eng., $50. UN 4-7673. A

DIVAN, 84", & matching chair, emerald green, $40. PL 3-9964. A

SHOTSHELL RELOADER, 12 ga., C H model, $45. DA 9-2371. A

AUTOMATIC WASHER, Maytag, $45. FA 0-2910. A

DINING ROOM SET, contemp.-style, walnut, 2 benches, 2 chairs, chartruese covered, seats up to 12, 1-yr.-old, $250. GA 4-5844. A

HOUSEHOLD FURNISHINGS, lounge chair, large-size, custom upholstered, $30; plank coffee table, 24"x48", $15; elect. heater, Trillmont, w/black heat, $10; table lamps, brass, new drum shades, $7 pr.; table lamp, white, $2; bookshelf, $2; end table, w/tile inserts, $3. PL 7-6973. A

GENERATOR, cyclohm, 500 w., DC, 6 batt. v., DC, 67 amp., DC, 3600 rpm, $50. PL 4-9637. A

BICYCLE, boy's, $15; mangle iron, $15; power lawn mower, $50; washing machine, Maytag, ringer-type, $20; couch & chair, $20; crib, large-size, $10; coffee pot, elec., $12. OS 9-5826. A

VOLKSWAGEN GHIA, conv., 1960, r/h, w/w. $1995. HA 1-2265. A

RAMBLER, 1959, custom station wagon, 2-tone, auto., r/h, individual reclining seats, w/w, nylon carpet, deluxe steering wheel & hub caps, 22,000 miles, $1750. FA 8-7478. A

PING PONG TABLE, $15; dining-room set, 4 chairs, $50; cornice box, approx. 13' long, 12" wide, combed plywood, $5. DA 4-1240. A

LAMBRETTA SCOOTER, 150 LI eng., 1960, 4-spd. trans., 2 seats, spare tire, tools. $300. AT 2-8060.

HOUSE, 3-bdrm., many extras, choice location in Torrance. $17,800. TE 1-3737.

BOY SCOUTS UNIFORM, size 14, $15; racing bicycle, English, 3-spd., new tires & tubes, $25. PL 6-5720. A

2-WHEEL TRAILER, 4'x7', new recap tires. $30. OR 3-0078. A

ENLARGER, Kodak cold lamp-type, has storage base for papers & negatives. $45. TE 4-7952. A

WANTED TO BUY

TAPE RECORDER, pocket or midget-size; transportation auto, below $200. OS 6-8331. B

BOLSTER PILLOWS for Hollywood bed. FR 6-9642. B

RENTALS OFFERED

APT., 1-bdrm., unfur., lower, child o.k. repainted, near Manchester & Western. $67.50. FA 1-3370. E

APT., large deluxe, 2-bdrm., lower, built-in oven & stove, near Northrop, water & trash service pd., $115 mo. Box 2301. E

FOR SALE OR TRADE

RAMBLER AMERICAN, 1961. $1795 or trade for equity OS 9-7957. M

HOUSE, 4-bdrm., 1¾ baths, 6-yr.-old, fenced tree-shaded, in Granada Hills. $16,500 or trade equity in home within 5 miles of Hawthorne. EM 3-8294. M

SADDLE PALS

Joe Black, newly elected NRC Riding commissioner, announces that the NRC Saddle Pals will saddle up and blaze a trail on Sunday, November 19, at T & L Stables.

TWILIGHT GOLF WINNERS—Proud trophy men, winners of the NRC Twilight Golf Leagues are from left, standing, Ken Clayton, Norair commissioner, John Solema, Dan Kurtz, Dan Scheick, Charles Hutcheson, Tom Asahina, Paul Green, Joe Ainge, Larry Smith, Rollis Peirce, Pete Wainer, Ted Deguisne, and Don Greco. Kneeling, from left, Harry Anderson, Ray Turrell, Jack Kuster, Dale Leedom, Lou Lauzon, Leroy Mitchell, Bob Sanders, Roy Jackson, and Don Lynch. There were 14 twilight leagues, each having 20 members playing in twosome teams. Play which lasted for 18 weeks was at Alondra and Western Avenue. These men are now competing in the Tournament of Champions and at presstime finalists Lou Lauzon and Dale Leedom were facing Jack Oddy and Larry Smith for the biggest award of all.

PUBLIC SERVICE AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, November 8, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

TIME COVER—Northrop Corporation President Thomas V. Jones and Nortronics' Q-Ball are featured on TIME magazine cover as keynote to their October 27 aerospace issue. Artzybasheff is the artist. The News reprints with TIME's permission.

NEWS BRIEFS

TASK FORCE PROGRESS — Another significant milestone has been passed in the Integrated Management Systems program, it is reported by Jack Mannion, assistant to the general manager and chairman of the Organizational Task Force. Phase I study on the Logistics Computer System portion of IMS has been completed and approved. This system is integrated with the previously approved Master Parts Listing concept. The study was accomplished by a team composed of Frank Albrecht from Administra-

(Continued on Page 2)

Highest Suggestion Award Paid to Bruce Blankenship

Norcrafter Bruce D. Blankenship, coordinator, Shop Load group, has just received the highest award ever paid by the Northrop Suggestion Award Plan. Bruce's supervisor is John Lefler.

Bruce's idea for finite control of input data to the Automated Operations Control (AOC) system earned him a check in the amount of $1388. The award was presented personally by Corporate Vice-president and Norair General Manager Dick Nolan.

The suggestion was necessitated by the need for accurate and timely transmittal of data to the IBM 7090 computer.

The AOC system, presently, controls all periodic production orders through their manufacturing cycle at the operation level. The computer, as it processes input data against thousands of orders each day, can spot with uncanny accuracy, any data that does not agree with information it has stored internally. When this disagreement occurs, the computer retains the data for reprocessing for three days and at the same time issues a report that it has been unable to process the data. This report is known as the "Mismatch Report."

Bruce's idea gives AOC the tool necessary to control and repair this mismatch condition in a timely manner long before the order is released to the shop.

This type of control, for assurance of computer compatible

(Continued on Page 2)

HIGHEST AWARD—Corporate Vice-president and Norair General Manager Dick Nolan, right, presents highest Suggestion Award check to Bruce Blankenship, coordinator, Shop Load group. Check amounted to $1388.

Honolulu Deadline

Reservations for Yearend NRC Hawaiian Holiday Close November 22

TOUR DATES—DECEMBER 26 THROUGH JANUARY 1

Space on Airplane is Limited

TIME Features Northrop

CORPORATION STORY IS AEROSPACE KEYNOTE

"Oh, Betty, look at the cover of TIME!"

That is how Norcrafter Pete Garrigan, senior wind tunnel model builder, greeted his wife last week when he arrived home proudly waving a copy of the October 27 issue of TIME. The cover bore a picture of Corporation President Thomas V. Jones superimposed over Nortronics' Q-Ball with a background of deep space.

First Pete insisted Betty read the article featuring Northrop as the stellar-performer of the aerospace industry, and then he rushed next door to show it to his neighbors.

Throughout the Southland, in El Paso, Dayton, Washington, Rapid City, Massachusetts — wherever Northrop men and women are stationed—the same story was repeated over and over. And everywhere the reaction was the same—unconcealed pride that their company and their company president had been featured in TIME.

All over the world millions of people were learning new facts about Northrop and its capabilities. The total TIME audience is more than 10 million persons. One of the most widely-circulated of all magazines, it is read in every country and principal city of the world.

Almost as interesting to Northrop men and women as the article itself is the story of how it came to be prepared. Last April Senior Editor Robert Christopher visited Los Angeles and called on

(Continued on Page 2)

Bloodmobile will Visit Norair on November 16

It is blood bank time again, states Charles Boyle, supervisor, Personnel Activities, and Norcrafters are being asked to rally to the cause of bringing the account up to balance.

Date of the bloodmobile visit will be Thursday, November 16.

(See Editorial, Page 3)

Hours are 7:45 a.m to 12:45 p.m.

Location will be at the Product Display Building—east of the Engineering Science Center.

Donor application forms for both Norair and Nortronics personnel have been distributed to organization clerks at Plants One, Two, Three, Four, and Engineering Science Center.

Transportation to the bloodmobile will be furnished with pick up points at main lobbies, Plants One and Two; cafeteria at Plant Three; and the main lobby, Engineering Science Center.

MATERIALS RESEARCH—Key men in Corporate materials research field meet at Norair to exchange information and to study divisional programs. From left, Dr. R. L. Jones, Material Sciences Lab; Dr. Alexander Weir, Corporate office; J. Raudebush, Development Planning, Radioplane; E. H. Munsey, general supervisor, Process and Container Engineering, Nortronics; J. E. Hendel, Manufacturing Research and Development, Norair; J. A. Van Hamersveld, chief, Material Sciences and Value Engineering, Norair; G. H. Silver, assistant chief, Development Engineering, Nortronics Precision Products Department of Norwood, Massachusetts; M. E. Carlisle, supervisor, Materials and Process Engineering, Nortronics; A. G. Fitak, supervisor, Materials and Processes, Radioplane; Ron Nash, Paradynamics group, Radioplane. Standing in rear, Dr. R. D. Johnson, supervisor, Material Sciences Lab; and seated, G. M. Moisson, Material Sciences and Value Engineering.

An "Orbiting Cape Canaveral" Norair Concept for Lunar Launch

An "orbiting Cape Canaveral" would cut two years from the U.S. timetable for manned voyages to the moon, Norman V. Petersen, chief, Astro Sciences group, told the Explorers Club last week.

Mr. Petersen said the Company's proposed Orbital Rendezvous Base System (ORBS) could use Saturn boosters for assembly of a launching platform in orbit around the earth.

This method, he said, would make manned space flights to the moon or planets possible much earlier than if the U.S. waited for the heavier boosters required for direct launch from the earth.

"Although the Saturn vehicles are amply large to do many unmanned tasks in space, they fall short of having the required capability of landing man on the moon and are totally ineffective when considering manned interplanetary missions," Mr. Petersen declared.

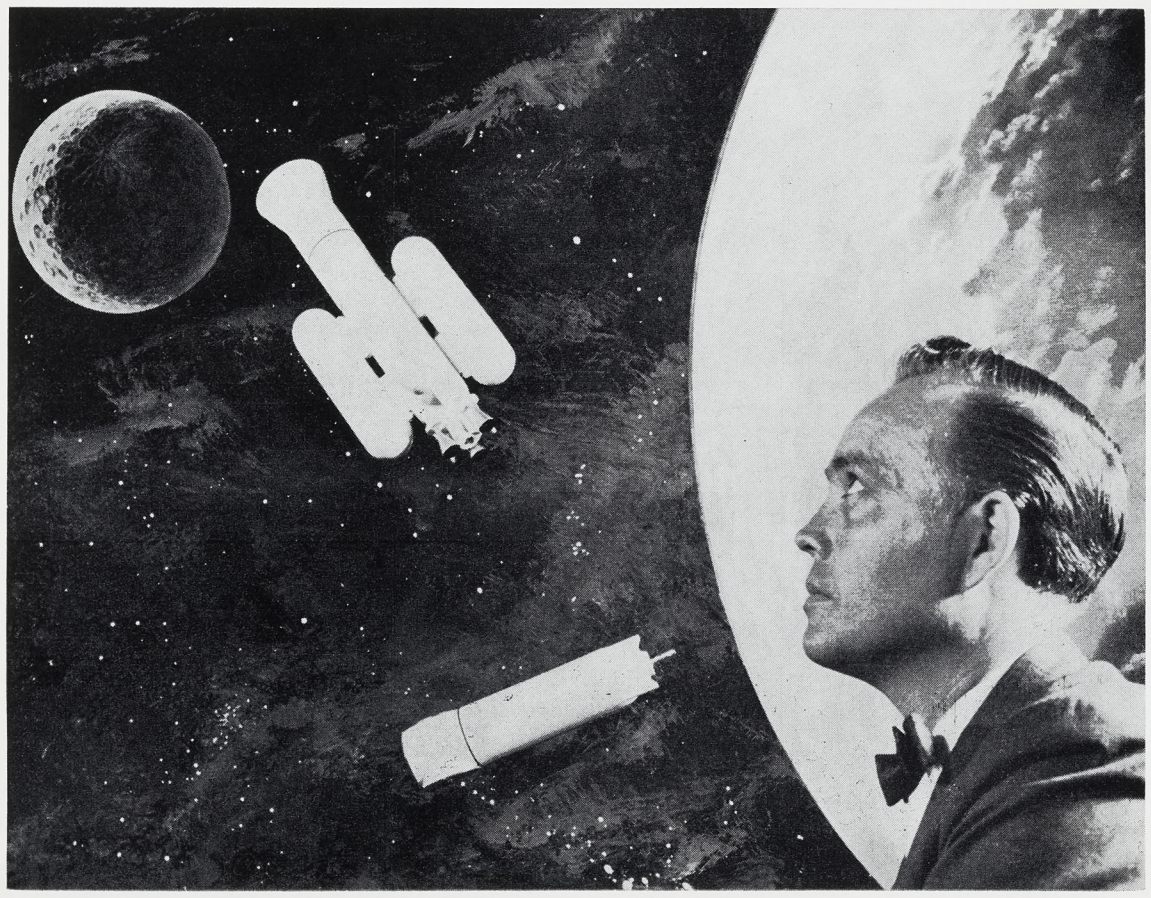
"We can, however, attain the moon with manned landings, employing the Saturn C-1 or C-3 boosters provided these boosters are utilized as surface-to-orbit logistic transports to build and supply a minimum orbital launch base with subsequent assembly, checkout and launch of lunar craft," he said. "The orbital launch system could make possible a manned lunar orbiting mission by 1965 and a manned lunar landing by 1967."

Building the launch base would require from two to 10 Saturn shots, he said, depending on how complex the base must be and whether earlier or later versions of the Saturn are used.

Unmanned sections of the launch base would be placed in orbit first in a "holding phase" which Mr. Petersen likened to the "stacking" of aircraft approaching busy air terminals. A "command module," manned by a crew of astronauts, would then be shot into orbit to rendezvous with the "stack" and assemble the modules into a launch base, he said.

COL UPS HOURLY

Hourly rated Norcrafters have received a one-cent-an-hour increase due to a rise in the Bureau of Labor Statistics' Cost of Living index, it has been announced by Corporate Vice-president and Norair General Manager Dick Nolan.



CANAVERAL IN SPACE—Norman V. Petersen, Norair chief, Astro Sciences, shows orbiting launch platform which, he told the Explorers Club in Washington, could cut two years from the U.S. timetable for manned landings on the moon. The Northrop system, called Orbital Rendezvous Base System (ORBS), would launch big manned vehicles while orbiting the earth—long before the U.S. has boosters with enough thrust to launch big payloads direct from the earth to the moon. Shown here is the manned lunar vehicle enroute to the moon following assembly, checkout, and launch in space. Lingering behind is the still-orbiting launch platform.

NEWS BRIEFS

(Continued from Page 1)

tive Services, Jim Steele from Logistics, and John Lane from Computing and Data Processing. Substantial savings in Logistics and related areas are expected. Detailed systems design and implementation are now in process.

SCIENTIFIC ADVISORY BOARD—The Scientific Advisory Board's panel on Aero and Space Vehicles will visit Norair 9 November for detailed review of Division progress on low drag boundary layer control research, and on the Laminar Flow Control technological airplane project . . . Heading the panel is Professor Courtland D. Perkins, chairman of the Department of Aeronautical Engineering, Princeton University . . . Northrop Corporation President Thomas V. Jones is a consultant panel member, however, due to conflicting schedules he will not be present. Corporation host at the meeting will be Senior Vice-president Richard Horner. LFC project officials from Wright-Patterson Air Force Base and from Headquarters USAF will also attend.

Northrop Board Okays Salaried Savings Plan

Northrop Corporation board of directors has approved the establishment of a savings and investment plan for salaried personnel, it has been announced by President Thomas V. Jones.

Sponsorship of the plan makes Northrop one of the first aerospace companies in America to provide such a benefit.

In making the announcement, Mr. Jones said that specific details and effective date must await approval by appropriate Federal and State authorities.

"The plan provides an opportunity for all salaried personnel to make significant additions to their personal estates through regular savings and company contributions," Mr. Jones stated. "Savings accumulated by payroll deductions will constitute an investment fund to be deposited with a trustee and managed by an investment committee. Broadly speaking, and subject to the limitations of the plan, the Company will contribute, as an addition to the fund, an amount equal to one-half the deposits of participants. The Company contributions will be invested in Northrop Corporation stock for the account of participants."

The savings plan for salaried personnel when added to the long list of other benefits already being received by Norcrafters maintains Northrop's position of leadership in industrial relations practices.

Top Award

(Continued from Page 1)

data, is vested in the Release Control branch of Manufacturing Control where Bruce is a leadman.

The Blankenship suggestion sets up a combination "suspense" file and a cross reference file through the use of the shop order set and the "brown line" copy of the shop order set. The order is read into the suspense file category through the use of an AOC transmitter. The order is then filed by "in-work" date. At the same time, the fab release copy (brown line) is placed in a cross reference file by serial number.

The day's "reads" are then processed by the computer. Should there be bad data, the computer will write a report back to Release Control in serial number order. The "mismatches" or "bad reads" are immediately traceable through the brown line cross reference file and corrections are made before the orders are released into the AOC pipeline.

TIME

(Continued from Page 1)

President Jones. Later he and other TIME editors decided there was a story to be told in the way the aircraft industry was converting itself under pressures of the space age. And, importantly to us at Northrop, the TIME men reached the conclusion that the way to tell this story dramatically was to build it around our company and its president.

Once the story was decided upon, a tremendous editorial effort was set in motion. Marshall Berges, Los Angeles bureau chief, spent many hours interviewing Tom Jones. Bob Jones, (no relation to Tom Jones) a member of Berges' staff, went to work to find out the latest information about other aerospace companies in this area. Other TIME men interviewed important men in Washington, D. C., New York City, Cape Canaveral, Boston, Seattle, Paris and in other cities.

Hundreds of pages of material were directed to TIME's New York office where Associate Editor Marshall Loeb condensed it and produced the article. After that it had to win the editorial okays of Senior Editor Christopher and Managing Editor Otto Fuerbinger.

Meanwhile TIME assigned photographers to take photos of Northrop people, products and facilities. Photographers Phil Bath and Julian Wasser took most of them. Famed cover-artist Artzybasheff's painting of Tom Jones was based on a color photo taken by Bath.

RIDES WANTED

7 a.m. — 3:45 p.m.

HAWTHORNE BLVD. & INGLEWOOD AVE., Hawthorne. Eva Donald, ext. 1216. OS 5-3113. 2

7:30 a.m. — 4:15 p.m.

CENTINELA & LA BREA, Inglewood. Sallie Pohl. ext. 1945. OR 1-6041. 3

8 a.m. — 4:45 p.m.

PRAIRIE AVE. & 176 ST., Torrance. George W. Schmitt, ext. 1611, DA 9-5364. 5

BROOKHURST & LA PALMA, Anaheim. Daryl Lee Smith, ext. 1475, KE 3-3668. 5

CARLYLE & 12TH ST., Santa Monica. William F. Sharpe, ext. 2501, EX 4-2390. 5

SUNSET & SEPULVEDA, Los Angeles. Chuck Allen, ext. 1506, 472-7668. 5

RIDES OFFERED

8 a.m. — 4:45 p.m.

CARLYLE & 12TH ST., Santa Monica. William F. Sharpe, ext. 2501, EX 4-2390. 15

BBSF Classified Ads

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MANGLE, Kenmore, $75; freezer, Ben Hur, 450-lb., chest-type, $400. OS 6-9523. A

STUDEBAKER, 1954, Starlite coupe, off-white leather interior, r/h, $195. 370-2095. A

AIR CONDITIONERS, 2, Fedders, 220 v., $375; Coldspot, 1 ton, $100; playpen, w/pad, $9. EX 1-4860. A

FORD, 1956, hd/top, w/w, r/h, automatic, power steering/brakes, $795. PL 9-0694. A

BUICK, 1956, 2-dr., stick shift, less than 2000 miles on rebuilt eng., $800. FR 7-1043. A

TV, Motorola, 17", $50. Box 2401. A

RIFLE, Mannlichter Shoenaur, 7mm, 2 boxes shells, case, $150. OS 9-6449. A

DESK, $15; car top carrier, $20. OS 5-7311. A

PONTIAC, 1960 station wagon, Catalina Safari, power equipped, r/h, w/w, actual miles 22,000. $2500. DA 4-7529.

V8 ENGINE, Gray marine Fireball, w/2-1 reduction gears, 235 hp, $995. PL 4-7861. A

VEGETABLE JUICER, needs new drainer, motor good condition, 3-yr.-old, $50; lawnmower, rotary-type, 4 hp, $25. OR 2-5578. A

THUNDERBIRD, 1961, convert., full power, w/w, r/h, $4300. OS 5-8091. A

REFRIGERATOR, 9', Kelvinator, $25. DA 9-6848. A

MGA ROADSTER, 1959, r/h, in good mechanical condition, $1200. FR 6-4634.

MOVIE EQUIPMENT, 8mm, 750 w., Keystone projector, De Jur camera and case w/standard & telephoto lens, 4-light light bar, splicer & editor, reel magazine for 12 400' reels. $150. LO 9-9846.

GOLF CLUBS, lady's, Wilson, 5 irons, 2 woods, w/bag. $40; roller skates, lady's, Chicago, shoe-type, size 5-5½, w/chrome-plated toe stops, $12.50. FA 8-7478. A

SPEAKER ENCLOSURE, Jensen Tri-Ette, custom, walnut finish, bookshelf-size, $65. PL 7-6831. A

SHOTGUN, 12 ga., J. C. Higgins, 6-shot pump action, power pack, ventilated rib sight, 4-in-1 gun, triple choke, w/case, shells & cleaning kit. $50. FR 8-4574. A

FRENCH DOOR, w/hardware & new aluminum screen. $4. PL 8-2335. A

RANGE, Wedgewood-Holly, $110; Jenny-Lind bed, complete, $25; barbeque, cart-type, w/rotisserie, $10; power lawnmower, 22", rotary, $30; bedside table, antique hand-pegged, $10. 378-8126. A

FORD V-8, 1956, blue & white, 4-dr., r/h, w/w, power steering, $225 for equity. $38 mo. pymt. for 13 mos. DA 3-9720. A

HOUSE, 3-bdrm., 2-bath, R-3 lot 60'x 150', roofed patio 15'x40', 10' glass sliding door, oversized liv. rm., Southwood construction. $24,900. DA 5-2851.

SKI BOOTS, lady's, size 7-7½, Swiss-made. $35. PL 6-6563. A

GUITAR, Gibson, elec., case & stand, Model ES-175. $120. PL 5-3456. A

BEDROOM FURNISHINGS, twin bedspreads, pink & white candy-striped duster w/matching coverlet, sham pillow case & cafe curtains for 2 windows, extra matching material, $40. FR 3-1565.

FOR SALE

SCREEN DOOR, size 36x81, $3. DA 7-9084. A

RAMBLER AMERICAN, 1960, 2-dr., stick shift, r/h, $1350. LA 1-5034. A

DELUXE CABIN, small, on 5 acres, in Hi-Vista area of Antelope Valley, 100 miles from L.A., $2650. FR 4-8317. A

GOLF CLUBS, bag & cart, 5 irons & 2 woods, $50. FR 5-5684. A

CHILDREN'S TOYS, pogo-stick, $2; spring jumping shoes, $2; roller skates, shoe-type, size 2, $2; deluxe Storkline doll buggy, $10; sewing machine, Singer, $6. AX 2-4958. A

WHEELCHAIR, $50. DA 9-5364. A

PIANO & bench, Hallet & Davis spinet, $425. DA 6-7232. A

STROLLER, spring-mounted, $20; ironer, Kenmore Gold Seal, chair, $40. LA 2-3697. A

CHRYSLER, 1955, 4-dr., r/h, V-8 eng., stick, $335. ME 0-3888. A

SAILBOAT, 14', centerboard cat rig, mahogany & oak, glassed, w/good sail & trailer, $250; Chevrolet, 1950, Styleline, 4-dr., good eng. & rubber, std. shift, $95. 371-8655 A

STOVE, Wedgewood, chrome top, gas, grille, glass oven door, broiler, automatic oven timer & clock, storage space, $100. OS 5 9414. A

SOFT TOP for Triumph TR-3, beige, complete w/bows, $65. LU 2-6790. A

VALIANT, 1960, V200, 4-dr., r/h, automatic, w/w, 17,000 miles, $1500. LU 3-5254. A

WANTED TO BUY

CHILD'S PLAYHOUSE. OS 6-5565. B

BICYCLE, boy's, 24", balloon tires, good condition. OR 7-2758. B

MOTOR SCOOTER. LO 9-7555. B

INSTRUMENT, brass or woodwind, for child, also banjo. OS 9-4342. B

CHEVROLET, 1954, 2-dr. AX 3-8452. B

FOR TRADE

TAPE RECORDER, RCA Orthophonic Hi Fi, w/remote control, mike, telephone pick-up, extra reels, 7½", trade for pistol & rifle reloading equip. Box 2402. C

TRAILER, 4'x8' box; wristwatch, man's, 21-jewel; typewriter, reflex camera; trade for set of encyclopedias, F-M tuner or radio, adding machine, or house painting. OS 6-5253. C

FREE (to be given away)

DOG, white, Maltese, male, 4-yr.-old, good watchdog; barbeque pit on wheels, funnel-shaped. OS 5-1347. D

PUPS, mixed boxer, 2½-mo.-old, females. FR 7-1732. D

RENTALS OFFERED

PVT. ROOM, w/bath, in Manhattan Beach, $10 wk. or $12 wk. w/kitchen privileges. FR 2-7106. E

APT., duplex, 1-bdrm., patio, children & pets ok., water & trash pickup paid, yard, paved off-street parking $65. Box 2403. E

PERSONALS

BUSINESS WOMAN would like to share apartment w/another business woman, near Prairie, Inglewood. Box 2404. L

FOR SALE OR TRADE

ACCORDION, 120-bass, student-size, $100 or trade for saxophone or tape recorder, battery-type. OS 6-8331. M

AUTO EQUIPMENT, tubeless tire, 6.70-15, & Ford wheel, $15, or trade for good sleeping bag. DA 9-2076. M

WORK BENCH, heavy ga. steel, 3½'x6' $20, or trade for rollaway tool chest 654-1274. M

SQUARE DANCERS TO START NEW SESSIONS

A new square dance class is now forming, it is announced by George Sanborn, NRC commissioner.

The sessions get under way November 13 at Henry Clay Junior Hi. Time is 7:30 to 10:30 p.m.

Enrollment ends November 27.

All Norcrafters are invited to take part.

Northrop-Norair News

VOL. 19 No. 24

1001 E. Broadway, Hawthorne, Calif.
A NORTHROP CORPORATION PUBLICATION
Published every other Wednesday
NORAIR DIVISION

CHARLES BRADFORD, Editor

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AND A GOOD TIME—Excitement and fever pitch activity was the order of the day at NRC's family picnic. Typical of the fun planned so successfully by Club officers and commissioners was the pie-eating contest. Photo shows Norair juniors going at it. Desire to win was of course mixed with healthy young appetites. What else would an N-J rather do than win while eating a good piece of pastry?

VERY, VERY LUCKY — Free pass to Hawaii, second time around, was won by Nortronics' E. D. Wittrock. Prize was originally won by Jack Mannion, assistant to the General Manager, who relinquished due to previous holiday plans. Dave Carney, NRC president, is at left. Charles Boyle, supervisor, Personnel Activities, hands the ticket over. Howard Cornelius, Travel commissioner, is at right, plus boy eating crackerjack.

Gem and Mineral Folk Plan Trek To Lake Havasu

Norcrafters who like the hobby of "rockhounding" are invited to attend a special meeting this evening, November 8, 7:30 p.m. at the NRC Clubhouse, it is announced by Dan Kozlow, NRC Gem and Mineral Club commissioner.

Featured guest for the evening is Carl Wood who will speak on "Chemical Action in Crystals."

An outing is scheduled for November 24, 25, and 26, at Lake Havasu at which time G & Mers will have an opportunity to put theory into practice. The mineral being sought will be blue agate.

NRC SCOUT UNIT WINS TOP HONOR

Callout of the Order of the Arrow Campout, under the auspices of the Los Angeles Area Boy Scouts of America, was conducted October 14 and 15 at Centinela Park, it is announced by Paul White, NRC Boy Scout scoutmaster.

NRC Unit 262 won top honors over 35 other scout organizations in camping competition.

SIERRA SKIING

Mr. weatherman has predicted ideal conditions for the forthcoming ski season.

The NRC Ski Club plans to take full advantage of these conditions for their annual Christmas trip, December 26 through January 1.

Accommodations have been made at June Loop Motel adjacent to a ski lift and only 25 miles from Mammoth Mountain. Cost will be $3.50 a person a night. Deadline for deposit, which is $7, must be submitted to Personnel Activities by Tuesday, November 28.

An Editorial

A Real Need Now

Just as Northrop and its Divisions has expanded over the past several years, so has the entire Los Angeles community expanded, bringing with it an increase in community responsibilities which all of us must share.

Among the more vital community services to experience an ever-increasing demand has been the Red Cross Blood program.

From a production of 4000 pints in 1946, last year Red Cross was called upon for 160,000 pints, and the need for this year will exceed 220,000.

Blood derivatives were unheard of 15 years ago. Now Red Cross has seven available for the treatment of anemia, hemophilia, nephrosis, hemorrhage, shock, burns, measles and hepatitis.

Open-heart surgery was unheard of 5 years ago. Now Red Cross must provide 12,000 pints of blood annually for some 600 heart operations. And hospitals have backlogs of patients awaiting heart surgery as soon as Red Cross can provide the blood. Several Norcrafters have had open-heart surgery, drawing heavily on our account.

A big Red Cross responsibility is the care and treatment of hospitalized children. Every fifth pint of blood Red Cross collects goes to a child. Red Cross provides the total supply to City of Hope, Childrens, Orthopaedic, and Shriners Crippled Childrens hospital. And some 300 children suffering from hemophilia look to Red Cross for their plasma supply (some 14,000 units last year).

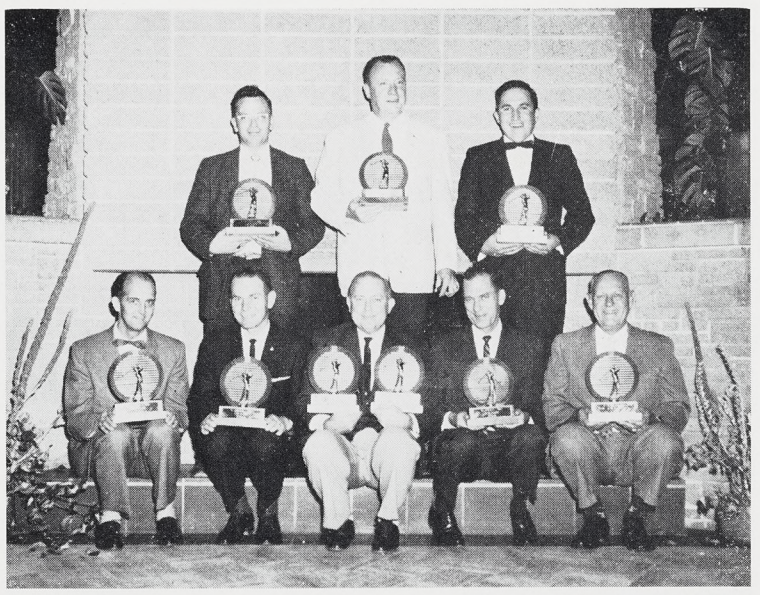
It goes almost without saying that Red Cross basic resource is in industry, for it would be impossible to recruit donors by the tens of thousands on a hit-or-miss basis with appeals to the general public.

Northrop has always acknowledged its fair share of community responsibility but the record indicates that we have a job to do to bring our blood bank account up to balance. During the past five years, Division personnel have given 5332 pints of blood and have withdrawn 5474 pints. This creates for us an overdrawn condition of 142 pints.

November 16 when the bloodmobile visits at the Product Display Building will be a time when we can make a significant deposit to better this condition.

A New Landmark on the Field

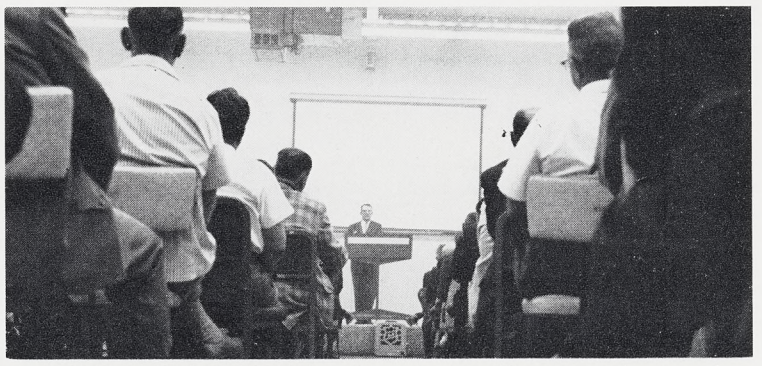
NEW TOWER—Hawthorne Airport (Northrop Field to all longtime Norcrafters) held open house dedication ceremonies to mark activation of new control tower. In photo from left, Hugh Cunningham, Hawthorne Florists, Inc. and Chamber chairman of the Airport Committee; Don Martin, publisher of chain of electronic and appliance trade magazines and Hawthorne's new mayor; and Craig Edwards, vice-president and manager of Hawthorne's Bank of America and Chamber of Commerce president. New tower, in keeping with airport's heavy traffic load, is completely modern with most advanced communications equipment. It replaces old tower over Norair bamboo fleet hangar in service for 22 years.



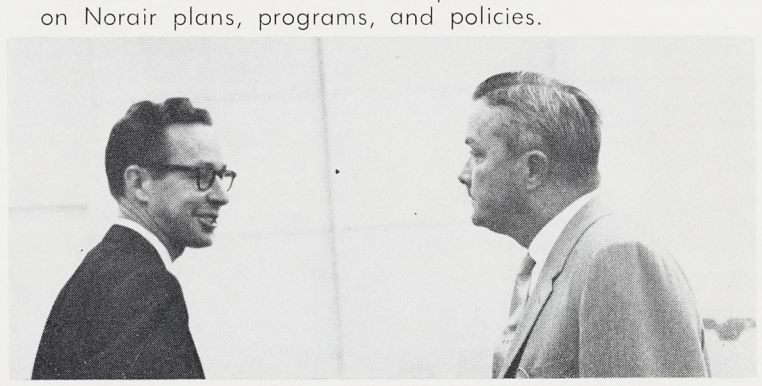
TO THE WINNERS — Rapid City photos from Virge Maniago bring news of NRC golf awards dinner. Trophy men proudly posing are from left, top, Messrs. White, Thompson, Poitra. Front, Muth, Rodgers, Wood, Brown, and Owens. Dinner was held at the Arrowhead Country Club.

AND THE LADIES—Just as proudly posing with their winning trophies are Mesdames Monger, Snow, McMasters, Mercer, Cook, and Yost. "We had a very active season," reports Virge. "Four leagues and 85 Norcrafters playing."

Management Forum



MANAGEMENT FORUM—Corporation Vice-president and Norair General Manager Dick Nolan welcomes all levels of management at first of newly inaugurated series of communications meetings. Three sessions were held, ten a.m., two and four p.m. to provide widest possible scope for dissemination of important information. Mr. Nolan answered hundreds of written questions from the floor on Norair plans, programs, and policies.



BETWEEN MEETINGS — Milt Kuska, manager, Laminar Flow Control Technological Airplane Project Department, and J. Grant Macdonnell, Norair treasurer, compare notes on Division programs and objectives. Range of questions asked Division officers covered entire plant spectrum. LFC progress was popular query. The new savings plan, future of schoolhouse project, commercial activities, were discussed in detail.

MANUFACTURING, ADMINISTRATION—Bob Lloyd, vice-president, Manufacturing, and Jack Mannion, assistant to the General Manager, explain T-38 schedules, subcontract workload, future of the N-156. Questions ranged to per diem, mileage, the dates of the yearend holiday.

AND HUMOR—Norcrafter question strikes humorous note during communications meeting. Part of the program was screening of Northrop Corporation capability film. Meetings are tentatively scheduled three times yearly, or, stated Mr. Nolan, "As often as such interchange through the ranks of management will serve a useful purpose."

TECHNOLOGIES—Dick Warner, Site Activation Department and George Douglas, vice-president, Engineering, talk about space programs, ORBS, PROFAC, lunar activity. Titan site activation, VTOL aircraft, overseas sales prospects for T-38, N-156, the Piaggio program, were discussed. Meetings were held in Product Display Building.

PUBLIC SERVICE AWARD

Northrop-Norair News

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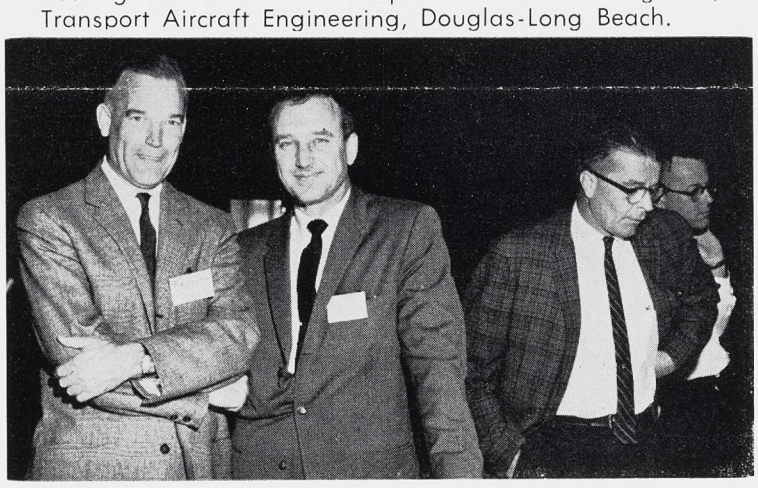
HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

Scientific Advisory Board Visits Norair

DISTINGUISHED VISITORS—Scientific Advisory Board's panel on Aero and Space Vehicles visited Norair last week for detailed review of Laminar Flow Control and low drag boundary layer control projects. With test specimen display are from left in foreground, Milt Kuska, manager, LFC Technological Airplane Project department; Chief Host Dick Horner, Corporate senior vice-president; Scientific Advisory Board members, A. Francis Arcier, Air Force Foreign Technical Division, WPAFB; Benjamin Ruffner, chief, Technical Staff, Aerospace Division, Boeing-Seattle; Dr. Courtland Perkins, chairman, Department of Aeronautical Engineering, Princeton University; George Trimble, jr., vice-president, Advanced Programs, The Martin Company; and Charles Strang, deputy director, Engineering and Product Development and chief engineer, Transport Aircraft Engineering, Douglas-Long Beach.



PANEL LEADER—Dr. Perkins, Board panel leader, and Northrop's Mr. Horner. Scientific briefings covered entire spectrum of project activity. Included were "LFC Wing Geometry and Suction Distribution," and "Application of LFC to Cargo and Multipurpose Airplanes." At right is panel member Carlos Wood, Engineering manager, Sikorsky Aircraft.

DR. PFENNINGER—Dr. Werner Pfenninger, chief, Boundary Layer Research, with hand raised, outlines boundary layer research progress to Dr. Perkins. Dr. Pfenninger gave highlight address on "Influence of Acoustical Disturbances on the Behavior of a Swept Laminar Suction Wing." In photo from left, Mr. Strang, Mr. Arcier, Dr. Pfenninger, Dr. Perkins, W. W. Kellogg, Lockheed-Sunnyvale; Mr. Ruffner, Mr. Trimble, and R. E. Kosin, assistant director, LFC Engineering. Noise generator horn used in tests is visible at right.

Norair Scientist Proposes Way To Join Space Vehicles in Orbit

How do you bring two large satellites together in space and lock them to each other?

Magnetize them!

That suggestion, backed by mathematical data, was given the American Astronautical Society in San Francisco recently by Dr. Elliot T. Benedikt, head of Norair's Space Physics Laboratory.

Present concepts for docking and coupling satellites require control jets, sensing devices, grappling equipment and complicated automation aboard the vehicles. Attracting the satellites to each other by creating electromagnetic fields around their hulls could eliminate some of these complex devices, stated Dr. Benedikt.

Dr. Benedikt, who is chairman of the AAS Space Physics Committee, has conducted preliminary analyses on the concept in connection with Norair's Orbital Rendezvous Base System.

With additional power sources in the satellites and electrical coils placed around the vehicle hulls, he said, the vehicles could be attracted to each other across the last 100 feet or more during the critical docking and coupling maneuvers. These maneuvers are the most sensitive in the rendezvous sequence that will be necessary whenever satellites are joined to make space stations, to refuel, transfer personnel or undergo repairs in space.

The vehicles could be disengaged by reversing the polarity of the electromagnetic fields.

In the weightless conditions of space, the docking operation would require a relatively weak electromagnetic force to pull two heavy vehicles together. However, they would move slowly, Dr. Benedikt pointed out. The time required would probably be about one-tenth of an orbital period (one-tenth the time required for the satellites to circle the earth), he said.

DR. BENEDIKT—and his Zero-G tower.

Corporation Registers Fiscal Gains

Northrop Corporation recorded gains of 12 per cent in earnings and 14 per cent in sales for the fiscal year ended July 30, Thomas V. Jones, Northrop president, has reported to shareholders.

Sales for fiscal 1961 totalled $267,454,965, compared with $233,679,427 for the previous year. Net income for 1961 was $8,673,321, compared with $7,740,219 in fiscal 1960. This year's earnings after taxes represented a 3.24 per cent return on sales.

This was the fifth successive year that Northrop's earnings increased, continuing an 11-year upward trend. Of the year's sales, $247,832,000 represented govern-

(Continued on Page 2)

ANNUALS AT PERSONNEL

Northrop Corporation annual reports for 1960-61 are available to Norcrafters at Personnel.

Call station 643.

Reports will be mailed anywhere in the Division or they may be picked up personally.

Jones Will Speak at Next M-C Meeting

Northrop Corporation President Thomas V. Jones will address the yearend meeting of the Northrop Management Club, it has been anounced by Prexy Ed Nolan.

The meeting will take place December 1 at the Thunderbird, 525 North Sepulveda in El Segundo.

Title of Mr. Jones' address will be "Northrop Corporation Goals for the Sixties".

Other features of the evening will be naming of the Mug of the Month, and the Bob Newkirk show.

Timewise, the social hour is at 5 p.m. Dinner is from 6 to 7:30. Mr. Jones will speak at 8, and the Newkirk show is scheduled for 8:30. Drawings and raffle prizes are at 9:40.

The menu is roast prime rib or fresh crab louie.

Thanksgiving Day Launches A Four-day Norair Holiday

A four-day weekend starts tomorrow, Thanksgiving Day, for Norair, it has been announced by Corporate Vice-president and Norair General Manager Dick Nolan.

Friday, the day after Thanksgiving, has been designated as the floating holiday for 1961. This gives Norcrafters their third long weekend for the year.

The previous four-day holidays occurred over the weekends of Memorial Day and Fourth of July. The one coming up, however, is different in that Norcrafters will not have to work a makeup Saturday.

The Division will be closed Thursday, November 23 to the beginning of shifts Monday, November 27. First Norcrafters to return to work will be Production, Maintenance, and Security people reporting in at 12:15 a.m. Monday morning. They will have been the "first out" however, leaving at 7 a.m. Wednesday, eight hours short of five days before.

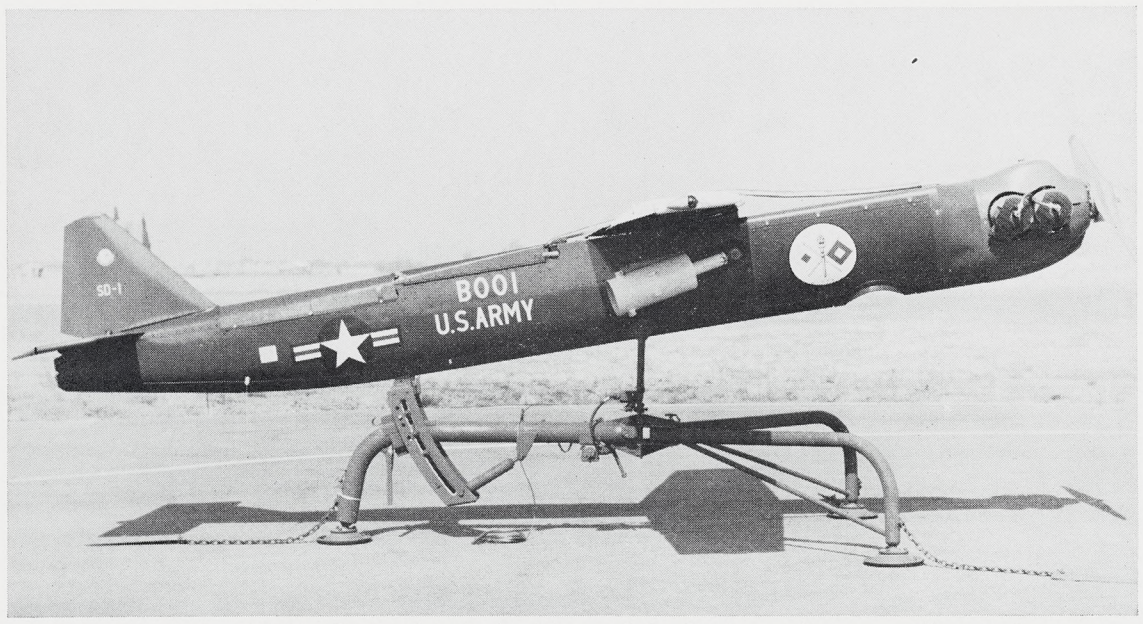
Mr. Nolan also announced firm plans for the traditional

(Continued on Page 2)

Salute to Capability

(See Page 4)

Radioplane's SD-1 Zero-Launch



FOR THE U.S. ARMY—Radioplane's highly mobile SD-1 combat surveillance drones, such as the one shown above in take-off position on a zero-length launcher, are now operational with U.S. Army field units both in the United States and overseas. Developed and manufactured by the Radioplane Division of Northrop Corporation, the SD-1 is designed for quick positioning and zero-length launching in rough terrain and from camouflaged positions. It is equipped to perform day or night photo intelligence and reconnaissance missions, and recently completed flight tests with TV camera installed. Other tactical mission requirements can be accomplished by utilizing specialized sensory equipment.

TOM QUAYLE APPOINTED CORPORATE V-P FOR COMMERCIAL-INDUSTRIAL

Thomas V. Jones, president, Northrop Corporation, has announced the promotion of two Northrop senior executives.

Thomas H. Quayle, vice-president and manager of the Nortronics Division Systems Support department at Anaheim, has been elevated to the office of corporate vice-president for commercial and industrial programs.

James J. Ward, formerly assistant manager of the Systems Support department, has been named vice-president and manager to succeed Mr. Quayle at Anaheim.

Both assignments became effective November 15, 1961.

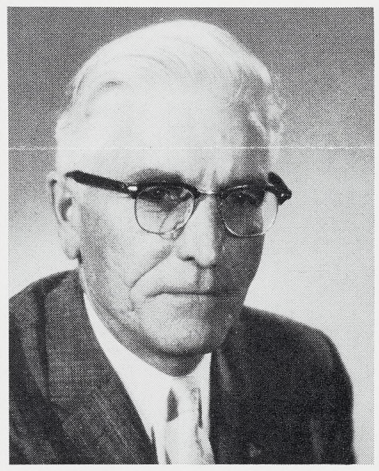
"In creating the new post of vice-president for commercial and industrial programs, we are moving to broaden our application of advanced technologies to commercial product areas," Mr. Jones said.

Northrop Architectural Systems and Pacific Curtainwall, Inc., will report directly to the top management of the corporation through Mr. Quayle. Both organizations will continue to operate as Northrop Corporation subsidiaries.

Mr. Quayle will also have direct responsibility for the development of the Company's "Schoolhouse" project. Developed at Norair, the Schoolhouse project is a product of the Division's capabilities in materials and structures. "Fullest exploitation of this program with its vast market potential can best be achieved with separate organizational status," Mr. Jones stated.

Mr. Quayle joined Northrop Corporation in 1939 as one of the company's 10 original "Hawthorne Hotel" employees. He has held senior management positions with Northrop continuously since that time and has been instrumental in the steady growth and diversification of Northrop's operations at Anaheim.

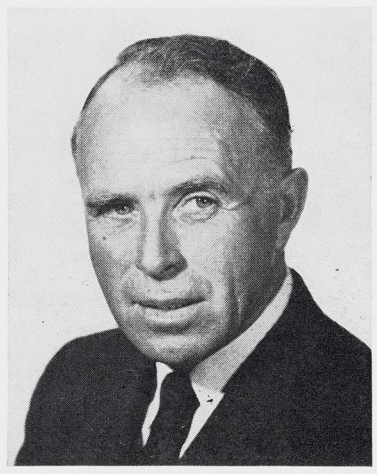
Mr. Ward has been associated with the aerospace industry for



THOMAS H. QUAYLE

more than 25 years and has advanced through management positions of increasing responsibility since he joined Northrop in 1940. He was named assistant manager at Anaheim in 1956.

Major programs of the Systems Support department include production of DATICO automatic check out systems for the Navy's Polaris Fleet Ballistic Missile System and airframe and ground support assemblies for the U.S. Army Hawk missile system. Nortronics also conducts research, development and production in advanced optical systems, countermeasures and ordnance, at Anaheim.



JAMES J. WARD

NOR-AID Assistance to 172 Needy Norcrafter Families

NOR-AID financial report for fiscal year ending July 31, 1961 showed a bank balance of $46,492.94, it has been announced by Charles Boyle, president. This amount remained after granting emergency and hardship assistance to 172 Northrop families during the 12-month period. NOR-AID grants for this year totaled $53,824.82.

Miscellaneous operating expenses for 1960-61 were $14.54.

The report was issued at the annual meeting of directors held on September 28. Election of the board of directors and officers of the Corporation was also held.

The board of directors consists of Ed Baum, Charles Boyle, Richard Carroll, John B. Clark, George Gore, F. W. Lloyd, D. E. Lutz, J. Grant Macdonnell, and Paul Wierk.

Officers are George Gore, chairman of the board; Charles Boyle, president; J. M. Mountain, vice-president and NOR-AID administrator; Marie Tully, secretary; and George Forbes, treasurer.

NOR-AID facilities committees are located at Hawthorne, Edwards, Palmdale, and Rapid City, South Dakota; Nortronics-Hawthorne and Anaheim.

The administrator's office is located at Personnel Activities, Plant One.

GOLF SCORES IN FOR EL CAJON

Scores of the two-day NRC Singing Hills golf tournament are in and counted, it has been announced by Ken Clayton, commissioner.

Mike Turney turned in overall low gross for the tournament with a 142. Overall low net was taken by Dan Casson with a 129.

First flight was won by Rollie Pierce with a 139. Second flight was taken by Mike Craig with a 143; third flight by Jack Aungst, 140; fourth flight by Al King, 140; and fifth flight by Joe Horst with a 135.

NEWS BRIEFS

NASA SURVEY—The National Aeronautics and Space Administration recently concluded a quality engineering and reliability survey of Norair Division . . . The purpose of the study conducted by NASA's Western Operations Office, Donald R. Mulholland, deputy director, was to establish Norair methods and procedures as a fitting capability when called upon to perform high level space work for the agency . . . In view of NASA's growing industry requirements, the survey afforded a particularly valuable opportunity for Norair to present its capabilities . . . Quality Control Engineering group was praised by NASA as being especially effective in their technical support of Norair programs. Engineering Reliability, Dr. Wm. E. Cox, chief, was studied in detail with emphasis on Division philosophy, concept and approach to this critical element so necessary to space vehicle design and workmanship.

T-38 PROGRESS—A total of 44 T-38 aircraft are now on station at Randolph Air Force Base, it is reported by Frank Mathes, chief, Norair Product Support group. Of the total, 29 are assigned to Category III work while 15 have been placed in instrument pilots instructor school . . . Webb Air Force Base has received three aircraft to date. On occasion of first delivery a subsonic fly-by was performed with key personnel from the Air Force and Norair in attendance. The Norair party to Webb was led by Corporate Vice-president and Norair General Manager Dick Nolan; John Alison, vice-president, Marketing; and Al Morgan, vice-president, Contracts and Service. Also present was Dan Collins, Northrop district representative from San Antonio.

Annual Report

(Continued from Page 1)

ment business and $19,623,000 represented sales of commercial-type products.

Missiles, electronics and communications systems accounted for $178,000,000 or about 67 per cent. Prime aircraft systems production and research and other airframe manufacturing accounted for $76,000,000 or 28 per cent. All other miscellaneous categories amounted to $13,000,000 or 5 per cent.

Sales of electronics and communications systems equipment continued to increase and showed a $54,000,000 increase over 1960.

Sales backlog at August 27, 1961, amounted to approximately $293,000,000, as compared with $309,000,000 a year earlier.

The bulk of the Company's sales during the past year was in ten top programs whose individual volume ranged from $10,000,000 to $50,000,000, Mr. Jones reported. These programs accounted for approximately 80 per cent of the Company's business. The remaining 20 per cent was spread through more than 60 other programs, "a number in the $1,000,000 to $10,000,000 category and growing," Mr. Jones said.

"The keynote of Northrop's business today and in the future is its emphasis on advanced technology," Mr. Jones said. "There is no other description which adequately encompasses the wide diversity of the Company's activities. A great deal of Northrop research goes hand in hand with current production. It is this factor, we believe, that provides continuing growth beyond the horizons of present programs."

ANNUAL CHILDREN'S CHRISTMAS PARTY

Sunday, December 17

12 to 4 p.m.

Watch for special Santa Claus announcement

Product Display Bldg.

Holidays

(Continued from Page 1)

yearend holiday.

This will be 10 full days at home counting Christmas Day, the weekends, and New Year's Day.

The home plant Christmas schedule, due to contract commitments, will not apply at Rapid City. T-2 Site Norcrafters will have the time added to their paid time off during regular vacation schedules.

Many finalized plans for the yearend holiday are in the offing, the NRC and Personnel Activities having booked a full schedule of events. These include the Hawaiian Holiday, the NRC Ski Club trip to the High Sierras, and a golf tournament at Fox Hills and Los Coyotes.

The regular NRC Christmas party for the children (to make sure that everybody is in the proper spirit already) will take place December 17.

NORCRAFTERS TO ADOPT FAMILIES

A Christmas tradition at Norair is the Adopted Family program and the coming yuletide season will mark the seventh consecutive year of this most satisfying charity.

Norcrafter organizations wishing to adopt a family should work through their supervisor and make their requests known to Mal Mountain or Marie Tully of the Personnel Activities staff. Their extensions are 786 and 2784.

Norcrafters who know of a family who need to be adopted are asked to furnish the family's name to Personnel Activities for screening and followup. If the need is real, they will be immediately placed on the available list.

Northrop-Norair News

VOL. 19 No. 25

1001 E. Broadway, Hawthorne, Calif.
A NORTHROP CORPORATION PUBLICATION
Published every other Wednesday
NORAIR DIVISION

CHARLES BRADFORD, Editor

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NRC VIGNETTE #18

NRC Camping Club

NRC CAMPING CLUB—Many things motivate the staunch NRC Camping Club member. A love of the outdoors, pioneer spirit, the wide open spaces, new scenery, the smell of pine trees, the vast expanse of desert make a man crank up his pickup, yell for the wife and kids and join a camping club caravan to the destination of the weekend. Wind, rain, sunshine, or sand in the face does not stay the Norcrafter who really likes to camp. Formal camping trips take place on a 30-day basis. The entire Southern California scenic area is their oyster—lakes, mountains, desert, seashore. Once in camp there is always plenty to do depending on the location. Hiking, wood chopping, fishing, hunting, swimming are all favorite pastimes. Fifty Norcrafter families have been known to participate in a single camping event. Most fun of all perhaps is cooking and eating out-of-doors. Potluck dinners are a favorite. In the evening there is campfire singing, sometimes outdoor movies, sometimes just tall yarns around the glowing embers, and of course if you are out of the smog-filled Los Angeles Basin, sleeping under those millions of stars is just the finest. Newcomers are always welcome to the Camping Club and as the saying goes, campers today are friends tomorrow. Photo shows typical outdoor feast featuring a steak fry at O'Neill Park. Camping Club commissioners standing at left are Earl Bird, Nortronics and Fred Armstrong, Norair. There were 140 Norcrafters in camp.

RIDES WANTED

7:30 a.m. — 4:15 p.m.

CRENSHAW & CARSON, Torrance. E. S. Kelton, ext. 416, FA 0-3468. 3

COMPTON BLVD. & VERMONT, Gardena. Irene Montesano, ext. 1222, DA 9-8468.

4TH & PICO or PICO & LINCOLN, Santa Monica. Harlan P. Rutter, ext. 1366, EX 2-2628. 3

8 a.m. — 4:45 p.m.

WESTERN & IMPERIAL, Los Angeles. F. L. Jones, ext. 752, PL 6-3856. 5

LAMPSON & MAGNOLIA, Garden Grove. June Bullock, ext. 518, LE 9-1375. 5

OLIVE AVE. & VERDUGO, Burbank. Would like a ride Monday through Thursday. Will use my car if someone else will drive it. Mary E. Faulk, ext. 1471. TH 2-8658. 5

AVALON BLVD. & 190TH, Gardena. Shirley Heimer, ext. 518, DA 3-7129. 5

RIDES OFFERED

7 a.m. — 3:45 p.m.

STUDEBAKER & ALONDRA BLVD., Norwalk. David Morales, ext. 527. 12

7:30 a.m. — 4:15 p.m.

4TH & PICO or PICO & LINCOLN, Santa Monica. Harlan P. Rutter, ext. 1366, EX 2-2628. 13

8 a.m. — 4:45 p.m.

AVALON BLVD. & 190TH, Gardena. Shirley Heimer, ext. 518, DA 3-7129. 15

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

DRAPES, floor length, w/valances, draw mechanisms, grey, enough for dining & living room, or 2 big windows, 2 smaller windows, $25; chairs, 2 living room, uph., $10 for both. PL 4-4384. 4

REFRIGERATOR, 1959, GE, 11 cu. ft., nutone brown, swivel shelves, built-in shelves in door, self-defrosting, $100. DA 3-3858. A

REFRIGERATOR, GE, 11 cu. ft., $45. OS 5-3076. A

CLUB CHAIR w/ottoman, brown tweed, 3-position back, $22.50. DA 6-4195. A

FURNITURE, divan, 2 occasional chairs, 3 lamps, 2 end tables, 2 pictures, $75. PL 4-5909. A

TELEVISION, 21" screen, $45. OS 6-3090. A

SLENDERELLA REDUCING TABLE, $50. FR 2-0720. A

BEDROOM SET, twin beds & mattresses, 3-drawer dresser, maple, $60. OR 6-4022. A

FOR SALE

PACKARD, 1953, 4-dr. sedan, p/steering & brakes, Ultramatic, w/w, radio & elec. antenna, twin spotlights, $135. OS 5-1496. A

THUNDERBIRD, 1959, pink & white leather upholstery, $2500. DA 9-9633. A

357 MAGNUM, S & W 6" barrel, 2 sets grips. $65. OS 5-0657. A

TV, 17", table model, w/movable table. $25. VE 9-7378. A

HOUSEHOLD FURNISHINGS, refrigerator, Hotpoint, 11 cu. ft., $135; stove, Detroit Jewel, $80; end tables & coffee table, 2, modern-style, $21; dinette set, chrome, green, $15. OR 1-5518. A

MASSAGE LOUNGE & belt massager, $50. LO 4-1988. A

SURFBOARD, Jacobs, lime colored, 8' 6". $75. FR 8-1732. A

HOUSE TRAILERS, 2, 8' wide x 28', 8' wide x 42', $475 & 2750. Box 2501.

RANGE, O'Keefe & Merritt, deluxe model, 4-yr-old, $75. OR 4-6086. A

SHOPSMITH & attachments, $165; power mower, $35; motor scooter, Cushman, $45; oak table, antique, round, $65; disc grinder, 16" commercial-type, $65; camping trailer, 1960, 15', sleeps 5, $795. FA 0-2097. A

AIR LUNG, Northill, w/dble. 70 cu. ft. tank, & spare parts, $100. FR 5-8278. A

BICYCLE, girl's 24", balloon tires, $12; guitar, Spanish-type, $10. DA 9-9464. A

FENDER SKIRTS for 1954 Olds, w/brackets, $5. OR 1-6692. A

ENLARGER, 4x5 Federal, $50; file cabinet, Kardex, $50; occasional chair, $35; table saw, $45. OS 5-0757. A

AUTO RADIO, Motorola, transistorized, 6 v., 6-mo-old, $20. FR 8-4975. A

FORD STATION WAGON, Country-Squire, 1957, 9-passenger, $800. OR 7-3122. A

CHEVROLET EL-CAMINO, 1959, 4-spd., stick shift, less than 13,000 miles. DA 5-2258. A

HOUSEHOLD FURNISHINGS, dining rm. sets, French provincial, 9-pc., $195, Danish-modern, $225, Duncan Phyfe, $40; sofa, French provincial, 8', $250; desk, $8; mattress, $5; deluxe chairs, $150. FA 1-4489. A

COAT, Persian lamb, 3/4 length, $100. AX 3-8452. A

PUPS, Dalmation, AKC registered, $50 & up. FR 1-3845. A

RADIO & RECORD PLAYER, combination, GE, blonde, $25; overload coil springs w/fittings, fits any car, $50. OR 2-1036.

MGA ROADSTER, 1956, 1959 eng., near new tires, wire wheels, $975. OS 6-0874. A

MATCH-MATIC SLIDE CAMERA, Argus C-3, slide projector, Kodak Cavalcade auto., cost $178.64; $150. PL 5-4534.

RIFLE, 22 cal. Winchester model to bolt action repeater, chambered for short, long & long rifle ammo., w/canvas case, $25; bicycle, boy's, 16", J. C. Higgins, w/coaster brake, kickstand, chrome fenders, $9. LE 9-3529. A

MOVIE EQUIPMENT, projector, 8 mm., 750-w., Keystone; camera, De Jur, & case, w/standard & telephoto lens, 4-lite lite bar, splicer & editor, reel magazine for 12 400' reels, $150. LO 9-9846. A

DODGE, bus. coupe, 1951, r/h, orig. owner, $125. FR 9-5592. A

STUDEBAKER TRUCK, 1952, 1½ ton, motor overhauled, $300. 371-6775. A

BICYCLES, metallic green, 3-spd., boy's, $50; Derailleur, 10-spd., $75; automatic washer, Maytag, recently overhauled, $35; speaker enclosure, Acousticraft, modern walnut, $15. FR 6-2110. A

PUPS, poodle, white toys, 11-wks.-old, comp. shots, male, $50; female, $75; dining set, light finish, table 5'5"x3'3", ext. 8'5", buffet, 3'18", 6 chairs comp. uph. red, $60. OS 9-8485. A

FOR SALE

TRAILER HOME, Universal, 1957, 8'x40', w/8'x40' enc. car port, within walking distance of Northrop, $35 mo. rent, $2650. OS 5-0051. A

TRAIN SETS, 2 complete, American Flyer, $25; dishwasher, GE, portable, $30. FR 5-4448. A

KARMANN GHIA, 1960, conv., light green, dark green top, r/h, w/w, $1795; 2 transistor radio, case & ear plugs, $8.95. HA 1-2265. A

PONTIAC 870, 1955, h/top, automatic trans., r/h, w/w, tinted glass, power brakes, $500. OR 7-7400. A

DESK, corner, white formica top & drawer front, $17.50. DA 6-6667. A

TRAILER, teardrop-type, sleeps 2, $75. DA 9-2371. A

CAMERA, Kodak auto. 35, 2.8 lens, case, rotary flashholder, $50. DA 9-1786. A

PLYMOUTH, 1957, 4-dr., $490. FR 1-3892. A

FORD PICKUP, 1941, $275. OS 9-4194.

TYPEWRITER, Royal elec., Elite type, automatic spacer, magic margin set, $195. FA 1-0020. A

AUTOMATIC WASHER, Maytag, Amp series, recently rebuilt, $35. FA 0-2910.

BAND SAW, 3-wheel-type, 8"x21" cap., $50. DA 5-2851. A

SAILBOAT, 11' class, dacron sails, American trailer, full boat covers, $495; bicycle, 20", boy's, $15; lawn edger, elec., $15. FR 5-7168. A

HOUSE, 3-mo-old, center-hall plan, 3-bdrm., 2 baths, w/marble pullmans & stall shower, den-dining room, breakfast bar, carpeting & drapes, built-in elec. oven & dishwasher, block wall fence, professionally landscaped, glass sliding doors leads to large patio, forced air heat, $500 down. JE 1-5421. A

PIANO, upright, $98. DA 7-9084. A

BICYCLE, 26", boy's, balloon tires, $15. OS 9-7230. A

STOVE, apartment-size, $50. 421-2935.

Hi-Fi, Viking stereo tape deck, w/case, cost $120, $49.50; receiver, Novatec, aircraft-type, pilots to tower & rev., AM/SW/LW, $49.50. OR 4-0762. A

AUTO PARTS, 1932 Ford coupe shell, frame, front & rear end, stripped down, $40; 4 new polished Model A Ford pistons, 3⅞" bore, $10; 4-cycle Brig. & Strat. eng., rebuilt, 2¾ hp, $10. DA 4-0930. A

OLDS, 1949, good eng., $90. OS 9-5365. A

YOUTH BED, w/mattress, $12; Babee Tenda, w/chair, $8; 10' plastic pool, $8; bicycles, English, 24", $15; Columbia, 20", $10. DA 3-7226. A

DINING ROOM SET, buffet, table, w/ext., 4 chairs, mahogany, Duncan Phyfe legs, $175. LO 9-7555. A

WANTED TO BUY

WHITE ROCK, for ground covering, approx. chicken egg-size. PL 7-2753. B

MOVIE CAMERA, 8-mm. TO 9-2700. B

BAR BELL SET, for 12 & 14-yr-old boys. PL 6-7681. B

RENTALS OFFERED

DUPLEX, 2-bdrm., upper, 1 child OK, 1½ blks. east of Crenshaw, $87.50. PL 4-4556. E

RENTALS WANTED

HOUSE, or duplex, 2-bdrm., Inglewood, Torrance area. OR 1-9558. F

PERSONALS

SINCERE APPRECIATION to all our friends for the thoughts & consideration following Ed's passing. MRS. LEWIS EDWARD (BEE) ROFF. L

If You Go for Cars, Go For NRC Sports Car Club

By Paul Ankeny, NRC SCC Commissioner

The NRC Sports Car Club brings together Norcrafters and their families who have a keen interest in automobiles . . . people who consider automobiles more than a method of transportation.

If words like Stutz Bearcat, Indianapolis, and Grand Prix give you a tingle you belong in the Sports Car Club.

Although most members own or have owned sports cars, Norcrafters have only to park themselves at the monthly meeting and complete the application form in order to become a member. The quality we look for is a firm desire to participate, whether as a competitor, an organizer, or a socializer.

The Sports Car Club carries the name of Northrop to the Southern California Council of Sports Car Clubs (SCCSCC), a governing body composed of a representative of each of the more than 50 other aerospace sports car clubs, as well as the noncaptive clubs in the area. Since only one championship rally and championship slalom is sanctioned by SCCSCC each month, Northrop's reputation for quality events has assured us a date on the SCCSCC calendar for both types of events year after year.

Our championship rally this year received the highest SCCSCC rating, and our championship slalom is currently riding fourth.

While competing in the championship events sponsored by other sports car clubs as members of a Northrop team, eight members have distinguished themselves with an official designation which rates them among the top 25 competitors in Southern California.

It's not all competition. We also conduct business meetings at the NRC Annex on the second Monday of each month (refer to your bulletin boards); have speakers and movies on competition, driver training, and automobile mechanics. Let's not forget the fun events, tours, and parties.

If you would like to participate in some of this activity, come to our next meeting and begin to learn the language. We'll provide a navigator to help you through the esses. After that . . . participate!

Call Personnel Activities, extension 2784 for further information.

ANKENY—and number seven.

DISCOUNT FOR JR BOWL AT P-A

Applications for reserved seats at discount prices for the Junior Rose Bowl Classic on December 9 at 1:30 p.m. are available in the Personnel Activities office.

Special discount price purchases a $3 reserved seat for only $2.

The Jr. Bowl is top notch rock and sock football. In addition all proceeds will support hundreds of underprivileged and handicapped children — in short all proceeds benefit youth.

YEAREND GOLF TOURNEY PLANS

The golf courses at Fox Hills and Los Coyotes will be the scene of a special two-day NRC golf tournament to be conducted during the yearend vacation, it has been announced by Ken Clayton, commissioner.

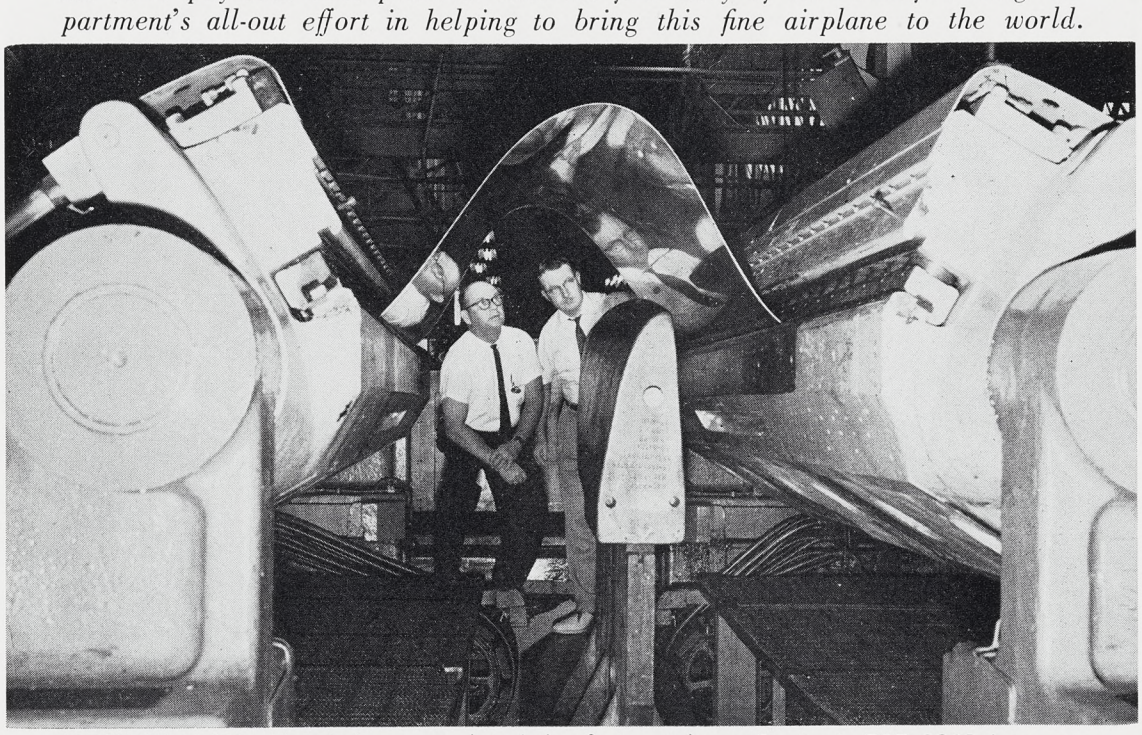
Play at Fox Hills will be on December 28; Los Coyotes, December 29. Green fees plus the prize fund amount to $11. Starting time is slated for 8 a.m. There is room for 30 foursomes.

December 11, a Monday, is the day the entry books open. Apply at Personnel Activities for starting times.

There will be merchandise prizes for the winners.

A Salute to Capability

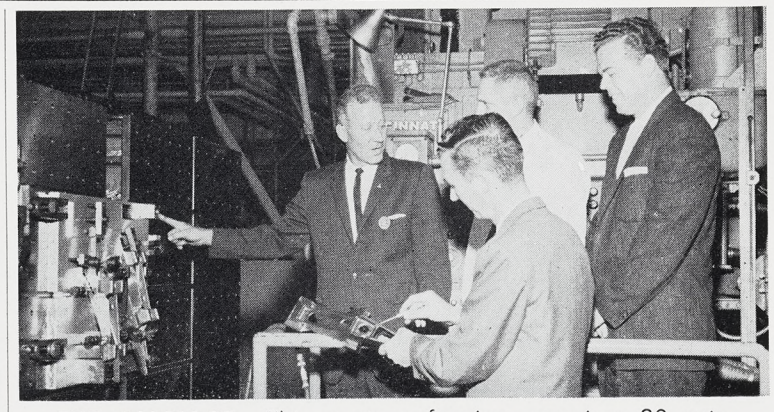
The new Boeing 707-320B Intercontinental I will be the longest range jet transport in the world. It even exceeds the great 707-320 by 20 per cent with the same payload. This pictorial tells the first story of our Manufacturing Department's all-out effort in helping to bring this fine airplane to the world.



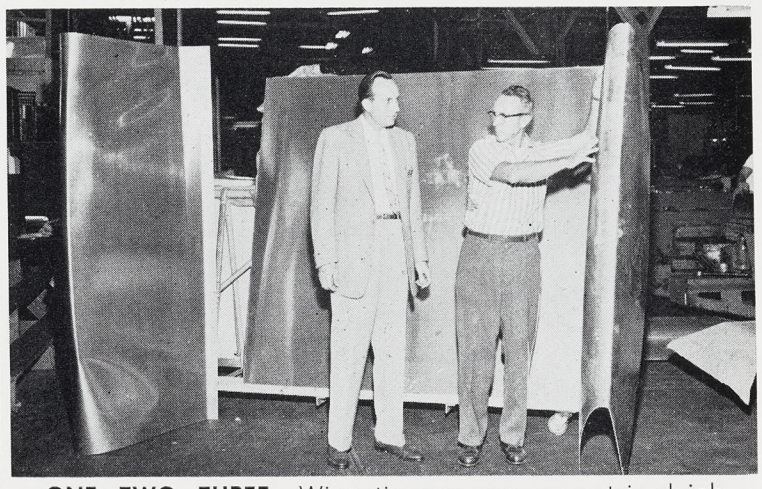
PRESSURE PLAY—Norair has completed the first article on Boeing's 707-320B Intercontinental I and shipped on schedule. A major revision of the big jet's airfoil, tolerances up to .0005, new tooling, new application of machine tools, were some of the challenges. "Consultation, communications, cooperation got us out in front and we stayed in front," stated Bill Minner, Norair superintendent, Subcontract Operations. Photo above shows "Hutch" Hutchinson, foreman, Sheet Metal and Frank Matthews, Quality Control, watching the Sheridan as it gets ready to stretch the new wing tip.

IMPOSSIBLE?—How do you get a .001 holding fixture for the K&T on an "I" section part with raw forged flanges that wants to bend in the middle? "It was easy," said Norair Machine Tool engineers. "We used Cerro-Low in plastic tubes poured on the job." From left are Supervisor Don McCown, Manufacturing Control; Foreman Bill Yankee, Machine Shop; Max Andersen, Machine Tool engineer; C. J. Maguire, tool project engineer.

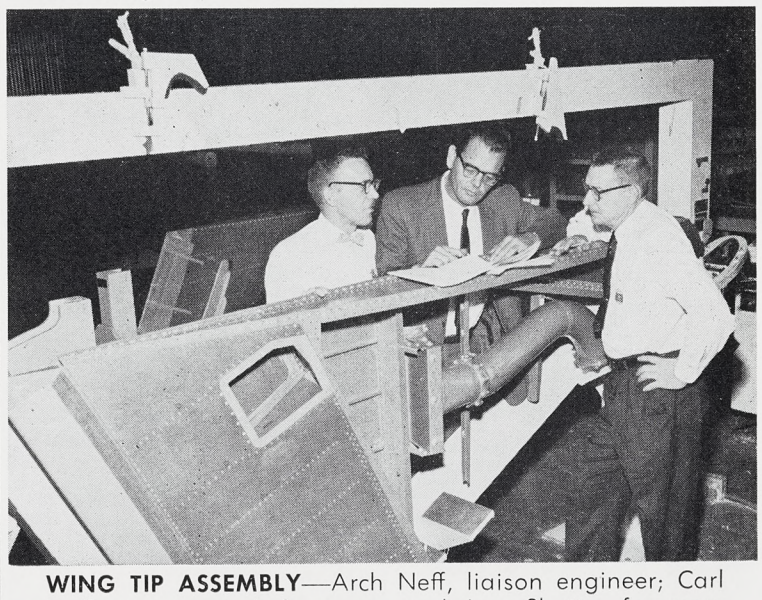
LEADING EDGE — "Mac" Maguire surveys track—leading edge assembly sequence on the 320-B model change. From left are Dick Webb, Production Special Assignments, "Mac", Bill Minner, and George Siroshton, foreman, Tool Shop. New "shaving" technique, via machine tool application to sheet metal structure, was successfully applied. Leading edge-slat matching surfaces are held to .010 for 19 feet.



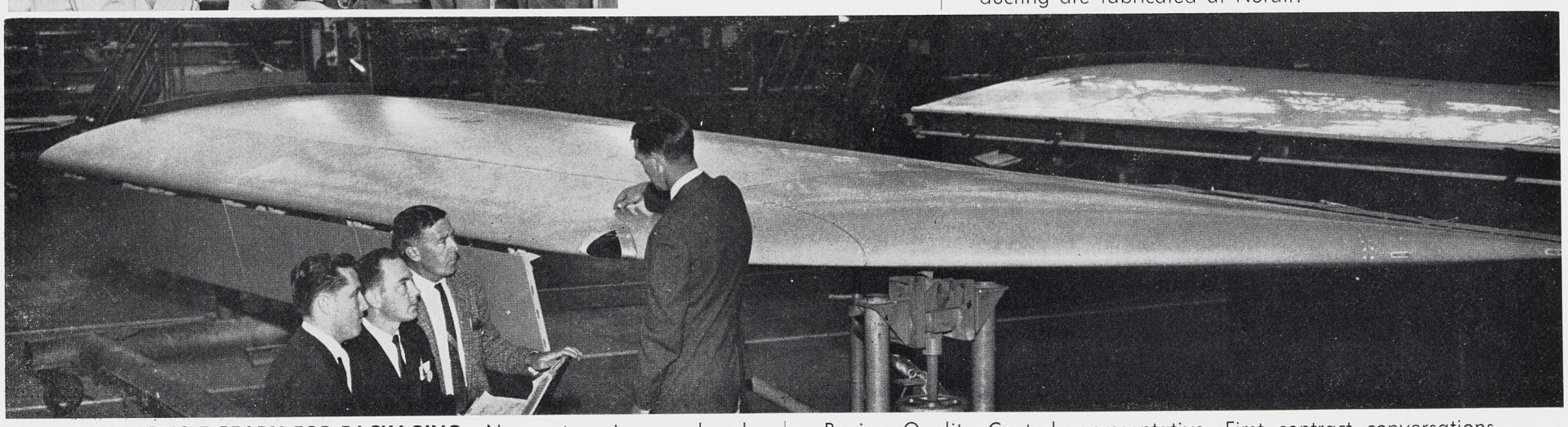
THE CARRIAGE—This part, a forging, requires 20 cuts. Cincinnati and its card control does the job in 45 minutes machine time. "This demonstrates the importance of having the right tools," stated Max Andersen, left. "Without numerical control, we wouldn't have made the schedule. New ideas and methods were mandatory in the developing of machine tools for the 320-B. The tolerance limits were much narrower than required for conventional structure." From left are Max, Harry Anderson, Materiel coordinator; Virgil Grubbs, senior liaison engineer; and Bob Bagby, Program Planning.



ONE, TWO, THREE—Wing tip cap was an outsized job for Sheet Metal. The part could have been made with shorter legs or in two pieces. "We made it big and in one piece," said Joe Purvis, left, supervisor, Tool and Production Planning, "This keeps the cost down." Said Will Wells, tool prover, right, " 'Hutch' says he has two of the finest stretch press men in the business. Tony De Carlo, and Dick Fairfield, and he can say that again. There is no substitute for knowing how when you are stretching a piece this size."



WING TIP ASSEMBLY—Arch Neff, liaison engineer; Carl Hoffman, general foreman; and Lou Shutts, foreman, Wing Tip Assembly, review production methods as assembly nears time for jig removal. All parts including ducting are fabricated at Norair.



FIRST ARTICLE READY FOR PACKAGING—New outer wing, produced on schedule, is testimony to Norair team ability and willingness by all hands to meet the challenge. From left completing paperwork prior to packaging and shipment are Gene DeWitt, Norair-Boeing Contracts administrator; Jim Thomas, Boeing Quality Control representative; Russell French, FAA representative; and Fred Walker, Boeing Quality Control representative. First contract conversations took place in December, one year ago, from Boeing pre-engineering blackboard sketches. Norair tool design, materiel procurement, and machine specialties got under way in February. First parts started through shop in April. This assembly and its right-hand mate were shipped November 14. Eleven months from dotted line to dotted line.

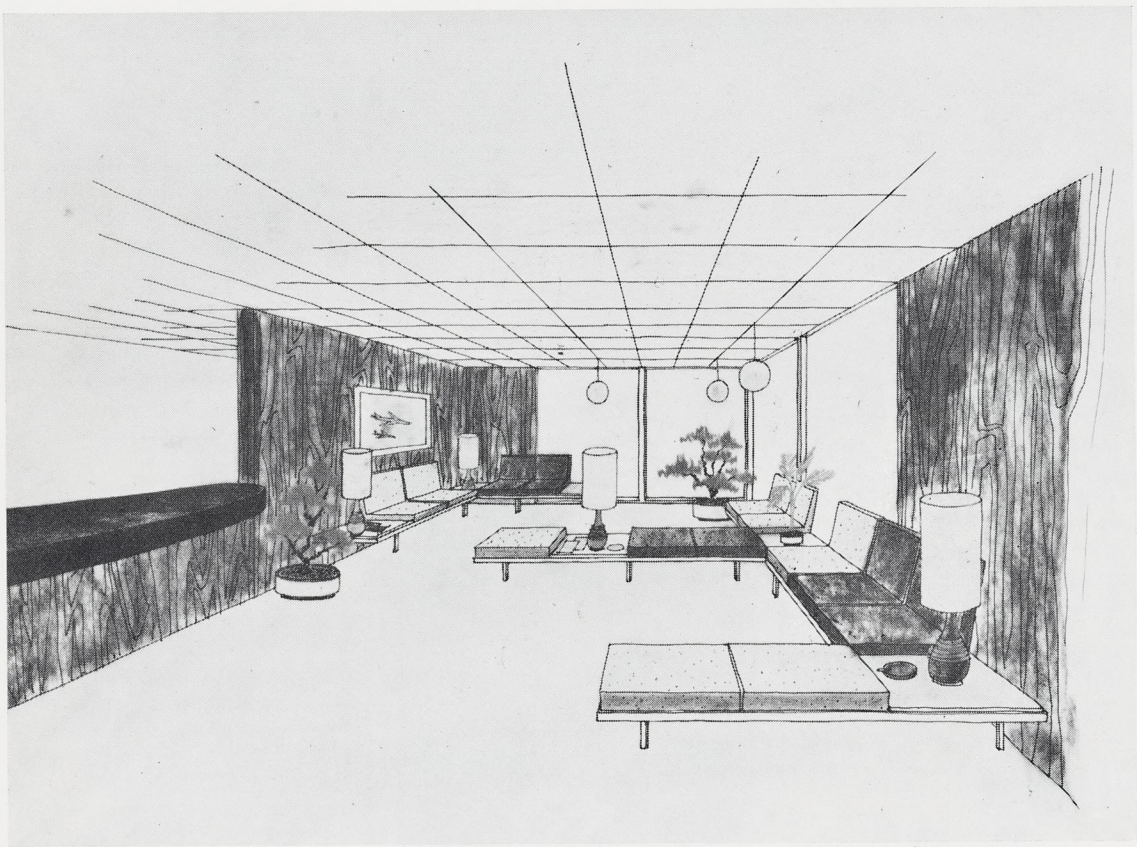
SERVICE
PUBLIC
AWARD

Northrop-Norair News

Issued biweekly by Norair Division of Northrop Corporation • Wednesday, December 6, 1961

HAWTHORNE, EDWARDS AFB, PALMDALE — SAN ANTONIO, RAPID CITY, EL PASO

SANTA HERE, SUNDAY, DECEMBER 17



NEW FLIGHT DISPATCH BUILDING—Artist's concept of air passengers lounge in new Flight Dispatch Building now under construction. Decor will be modern and in keeping with Division master plan. Feature will be pilots readyroom, lockers, showers, and restrooms for visiting military and civilian crews. Plant side entrance will be through patio. Lounge has picture windows, foam rubber divans, reading lamps.

MODE OF TRANSPORT BIG SURPRISE STATES DAVE CARNEY, NRC PREXY

Santa Claus is coming to the Product Display Building Sunday afternoon, December 17, it has been announced by Dave Carney, NRC president.

The jolly old gentleman will spend four hours here from noon until 4 p.m., being briefed and taking orders on what Norair and Nortronics juniors want in their Christmas stockings.

He will also have a goodly stock of toys with him to pass around just in case anybody can hardly wait until Christmas.

"Santa will arrive sharply at 12 noon," states Dave. "He will land light as a feather on the lawn in front of Plant Four adjacent to the Product Display Building.

"How he will get here from the frozen wastes is a big surprise. He will not come by North Pole type sled but by modern-day aerospace transport. He will come whirring down in none other than Rudolph the Red Nosed Helicopter.

"As soon as he lands, he will make his way directly to the Product Display Building where all good little Norair and Nortronics juniors and their parents will be on hand to greet him officially for this fine yuletide season of 1961."

The Christmas party will be a two division effort.

The PDB will be in a festive

(Continued on Page 3)

CREDIT UNION EXTENDS LOAN PAYOFF TIME

The Northrop Credit Union has extended the period for repayment of home improvement loans, it has been announced by Treasurer Walter T. Gage.

Repayment time, formerly three years, is now five years.

As an example, a $3000 home improvement loan being paid back on a three-year basis would require $25 a week. Under the five-year time span, only $16.50 a week is needed.

The new ruling is effective immediately, Mr. Gage said. The five-year repayment plan will also apply to existing loans if Norcrafter borrowers so desire.

Jones Addresses Management Club Predicts New Contracts in 1962

Northrop Corporation is gearing up to place increased emphasis on space programs, President Thomas V. Jones told members of the Management Club last Friday night.

Mr. Jones declared the stepped-up space activity would be conducted by a team to be headed by Richard E. Horner, senior vice-president/Technical. Organization of the expanded space group is now being determined and will be announced in the near future.

Stressing the importance of timing in the achievement of goals, Mr. Jones declared. "We are going to place increased emphasis on space work, and we are going to organize to get our fair share of the space business."

Space work represents one of the company's major goals for the 1960's. Others are aircraft, missiles, international sales and commercial products, Mr. Jones said.

He spoke before a packed house. The largest Management Club gathering in history of the Club, according to M-C Prexy Ed Nolan.

Mr. Jones received a standing ovation.

Just previous to his address he had been awarded the highest honor, the "Mug of the Month," which is bestowed on those members with outstanding records of service in the interest of the Company and the Club.

George Gore, corporation secretary and assistant corporation counsel, made the presentation outlining Mr. Jones' career—a California native son, educated at Stanford where he worked to pay the major share of his expenses, graduated cum laude, time out from school to work as a deckhand on a freighter, and his steady climb up the ladder of government and industry to his position as president and chief executive officer of Northrop Corporation.

Mr. Jones told Management

(Continued on Page 2)

COMPANY SEEKS LINGUISTS

Parlez-vous? Habla, Ud.?

Norair Personnel Organization, Dave Stadler, chief, advises that a search is under way for people throughout Northrop Corporation who know languages.

The need for linguists, both in United States and abroad, is increasing due to the continuing expansion of company business activities throughout the world.

Anyone having the capability to fluently speak, read and write foreign languages, should contact Personnel, Organization 1242, Zone 9. Give your name, the language or languages you speak, your organization and man number.

If your capability can be utilized you will be contacted when there is a requirement. All information submitted will become a part of your personnel record and its release will be restricted to only those authorized to have access to personnel records.

New Flight Dispatch Building

Norair Division will soon have a new Flight Dispatch Building and pilots' quarters, it has been announced by Dick Nolan, Corporate vice-president and Norair general manager.

Located at the northwest corner of the Company fleet hangar, the new facility will be modern in decor and in architectural

(Continued on Page 2)

Shareholders To Vote on Stock Split

A 25 per cent dividend increase and a proposed two-for-one stock split make news for Northrop shareholders.

Northrop Corporation's board of directors voted a 25 per cent increase in the Company's quarterly dividend. A dividend of 50¢ a share of common stock was

(Continued on Page 2)

NEWS BRIEFS

PROJECT HYDRA—A highly complimentary letter has been received from the Bureau of Naval Weapons, Washington, D. C., acknowledging the Division's work in the Navy Long Range Scientific and Technical Planning Program study, it is revealed by George Douglas, vice-president, Engineering . . . To quote, "The Bureau of Naval Weapons is very appreciative of the work performed for Project Hydra by the Norair Division . . . We have derived real benefit from your study and consider the quality of your effort to be excellent" . . . Norair's participation in the program is continuing under present Navy arrangement for another year.

MR. DOUGLAS AND T-38—George Douglas, Norair vice-president, Engineering, has taken his first flight in the T-38 Talon. Lew Nelson, director, Flight Test, was pilot. The flight, in a regular production airplane, was from Palmdale. Prior to the flight, Mr. Douglas took his two-day high altitude indoctrination at March Air Force Base including a "flight" in the chamber to over 40,000 feet. . . . To date over thirty key Norcrafters on the T-38 program have taken high altitude indoctrination and have subsequently flown in the airplane. These include Corporate and Division officers, designers and project men, T-38 Marketing personnel, medical personnel, and various specialists. Stated Mr. Douglas, "Actual flight in the T-38 is a most important factor in completely knowing, understanding, and being sympathetic with, the airplane. Norcrafters with critical responsibilities on the program are better able to serve the customer and the customer's needs for having actually been through the Talon's performance cycles. Each such familiarization flight calls for extensive preparation. Detailed planning, briefings, study and indoctrination in the altitudes are required. All Air Force regulations must be strictly observed and adhered to before takeoff is authorized. Product knowledge of this type, although of necessity limited to personnel with vital program assignments, becomes a distinct asset to the welfare and service fitness of the airplane . . ."

T-38 Arrival at Webb

(See Page 4)

At Rapid City

MEETING AT RAPID CITY—T-2 Site Northrop Management Club members meet for dinner and discussion at Rapid City's Esquire Club and Virge Maniago sends photos. Shown here, Club Vice-president Ralph Branning welcomes Doctor Weiner Von Astroshnut III to the microphone. The good "Doctor" held forth on space, etc. Additional entertainment was by the "Edmond Sisters". Occasion also served as moment to present Indian war bonnets to Norcrafter chiefs at T-2.

President Jones

(Continued from Page 1)

Club members that Northrop stands in the forefront of the great aerospace companies in the technologies of manned aircraft.

"Manned aircraft is a way of life at Norair," he stated. "We have achieved our position by utilizing the advanced technologies to provide simpler solutions to the defense problems."

He predicted new manned aircraft contracts both at home and abroad before the end of 1962.

He stressed that designers should keep their product simple and functional. "In this way you will not only come up with a product that the customer can afford, but you will fly your airplanes sooner," he declared.

Speaking of Laminar Flow Control, he called attention to the government's high regard for that program in setting aside major funds for its development when the big pressure is for ICBM's and space. "LFC promises to give America the long endurance airborne defense platforms we need in guarding our shores against any enemy," he stated.

In the missile area, he again predicted that the Company would participate in the new family of missiles, the MRBM's. He stressed the importance of timing here. "Our decks are cleared for action in this field. We will move 'hard' in this direction."

As for space programs, he stated that Northrop has followed the "secant" course—one of interception rather than direct pursuit—to achieve standing in this great effort.

"Space officials encouraged us to enter our first big space competition. While we did not win it, it served to earn us important recognition as a top space company, and we have been asked to continue our proposal efforts. Evaluations of NASA officials have encouraged our continued efforts in the space business."

He paid tribute to Radioplane with its pinpoint landing recovery systems, and to Nortronics with its undisputed know-how in guidance systems.

Precision Products in Massachusetts was also highly complimented for its success in the severely competitive gyro business.

He reported that Northrop International operations were making significant progress. "We have established excellent relations with overseas industry," he stated. "And Northrop International is already in the black."

In speaking of commercial activities, he stated that Northrop Architectural Systems would without question become a big factor in Company progress. "Commercial activities now amount to 8 per cent of the Corporate gross sales dollar. This will, in the very near future, grow to 15 per cent."

The Norair-developed "schoolhouse" project also holds high promise. "The potential of this activity is as great as any in the Company and we will soon know whether or not we can expect success."

His summary statement was keynoted by saying, "Our goals are clear. Winning contracts is our job.

"In the new family of missiles we have prime capability.

"In space, we are going after the major systems.

"We must work harder on proposals.

"Our final goal—to achieve solutions that are sound technically and economically."

WHITE HOUSE CONFERENCE

President Thomas V. Jones last week joined other top defense industry leaders in meeting at the White House with President Kennedy and Vice-president Johnson for a conference on the subject of equal opportunity for equal skills.

"The President was assured of our unqualified and continued support," Mr. Jones related to the Management Club. "This is not a new thing for us. It has always been our way of doing things at Northrop and always will be. This problem that our nation has faced for so many years will soon give way. Education is the powerful instrument that must eventually eradicate it completely from the world."

Material Sciences Laboratory Adds Three Ph. Ds for Space Work

Addition of three top aerospace scientists to Norair's already talented cadre in Material Sciences group, signaling a broad expansion of Division activities in the fields of space materials research, has been announced by John Van Hamersveld, chief.

DR. R. D. JOHNSON

Dr. R. D. Johnson from the Case Institute of Technology where he received his M.S. in physics and his Ph.D. in physical metallurgy, will head Norair's new Material Sciences laboratory branch which is composed of the three following units.

The Physical Chemistry unit currently being headed by Dr. Johnson.

The Evaluation and Facilities unit which is headed by H. E. Remillard, longtime Norcrafter with wide experience in Quality Control, materials and specifications, and aerospace processes.

And the Physical Metallurgical unit which is headed by Dr. Richard L. Jones who received his M.S. and his Ph.D. in metallurgical engineering at the University of Michigan.

Also a new member of the branch is MSL scientist for special projects Dr. Roger M. Heitz, Ph.D. who is a Fulbright Fellowship scholar from the University of Colorado. Dr. Heitz was awarded his doctorate at the University of Strasbourg, France.

Work that MSL will undertake is outlined.

DR. R. L. JONES

The Physical Chemistry unit will specialize in property researches and aerospace application in sealants, adhesives, and coatings. Research work will also be carried on in bonded structures and new materials and concepts.

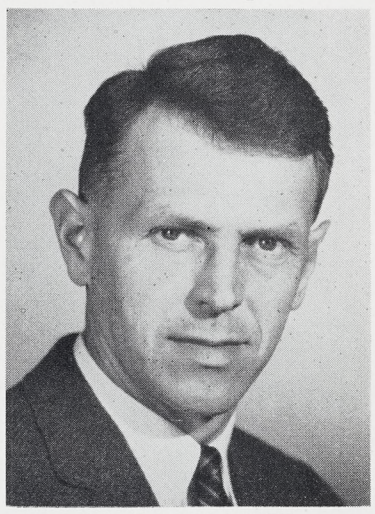
The Evaluation and Facilities unit will be primarily concerned with qualification, evaluation, maintenance, and de-bugging in the field of commercially applied materials.

The Physical Metallurgy unit will research welding, brazing, and the complete range of high temperature reactions, and characteristics of new materials and concepts.

Material Sciences Lab work will support (1) Norair funded research programs which are developing capabilities in selected areas; (2) government R & D contracts such as work currently being carried out in extrusions and sealants; (3) inter and intradivisional work as required on other programs at Norair and throughout the Corporate Divisions; (4) maintenance and support of current contracts such as LFC and the T-38.

The Material Sciences Lab is already well equipped with an extensive variety of fine analytical tools. Also, at present, the latest scientific equipment is being added for studies in higher and lower temperatures and in hard vacuum environments.

MSL has research under way on a wide variety of composites, such as high strength-to-weight ratio materials, refractory metal honeycomb and systems especially designed to control meteroid penetration and damage.



DR. ROGER HEITZ

Flight Building

(Continued from Page 1)

harmony with Division's master plan.

The large picture-windowed waiting room will open directly on the Field. Glass and streamlined doors are by Acme of Northrop Architectural Systems. There will be walnut paneling, foam rubber divans, reading lamps, stage lighting. Planters and paintings are part of the decorative scheme.

The entire building will be air conditioned.

Everything possible has been done to create comfortable, pleasant, and tasteful surroundings for air passengers and crews and military personnel on their way in or out of Northrop facilities.

Stated Mr. Nolan, "With increasing number of military, government, and industry personnel coming to our Division by air, the Flight Dispatch lounge is more often than not our 'front door' and serves as our welcoming area. We have long needed such a facility. The new Flight Dispatch Building answers this need."

The building was designed by Corwin H. Eberting, jr., AIA architect of Redondo Beach.

MANUFACTURING CONTROL DANCE

Manufacturing Control personnel invite one and all to attend their dance which will be held Saturday, December 16 at the Mayflower Ballroom. Location is 234 Hindry in Inglewood.

Norcrafters may obtain tickets which are 40 cents each at Personnel Activities.

Activities will get under way with a social hour from 8 to 9 p.m. Dancing will begin promptly at 9. Leon Guide and his orchestra will furnish the music.

Dancing will continue till 1 a.m.

Dividend

(Continued from Page 1)

declared for the quarter ended October 29, 1961. The previous quarterly dividend has been 40¢ a share.

Thomas V. Jones, Northrop president, reported that the Company's sales for the first quarter of the current fiscal year totaled $74,541,000, an increase of 20 per cent over the $62,028,000 for the same quarter of last year. Earnings for the quarter, which ended October 29, 1961, were $2,033,000, approximately the same as the $2,042,000 for the same quarter of last year. This was equivalent to 98¢ a share on the 2,075,723 shares outstanding October 29 as compared with $1.09 on 1,874,607 shares outstanding a year earlier.

Sales backlog on October 29, 1961 totaled approximately $334,000,000, as compared with approximately $307,000,000 a year earlier, Mr. Jones said.

The cash dividend declared is payable December 14, 1961 to stock of record December 1, 1961. On the basis of the proposed two-for-one split of the common stock, the 50¢ quarterly payment would be equivalent to 25¢ a share on the split stock. The pending proposal to split the stock was voted at the directors meeting on September 20, 1961, and will be submitted to Northrop shareholders for approval at the Company's annual meeting on December 12.

SEARS TOOL HAS SALE OF NORAIR LIGHTERS, LINKS

The Norair Sears Tool Store has stocked some choice Company novelty items that are calculated to be very appropriate Christmas gifts, and at a discount.

They have on hand a stock of 275 T-38 cuff links, a regular $2.29 article on sale at $1 including tax. They also have 500 lighters, regular price $1.98 also on sale at $1 including tax.

Sears store has plenty other Christmas items. Everyone in the Santa Claus market is invited to come in and look around.

Northrop-Norair News

VOL. 19 No. 26

1001 E. Broadway, Hawthorne, Calif.
A NORTHROP CORPORATION PUBLICATION
Published every other Wednesday
NORAIR DIVISION

CHARLES BRADFORD, Editor

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RIDES WANTED

7:30 a.m. — 4:15 p.m.

EL SEGUNDO & PRAIRIE, Hawthorne. Gladys Gibson, ext. 253, OS 5-9561. 3

ROSELLE AVE. & 132ND, Hawthorne. John F. Shrake, ext. 556, OS 5-3880. 3

SAN DIEGO FREEWAY & BRADDOCK DR., Culver City. E. D. Peden, ext. 2773, EX 1-7014. 3

8 a.m. — 4:45 p.m.

LAMPSON & MAGNOLIA, Garden Grove. J. Bullock, ext. 518, LE 9-1375. 5

SOUTH ST. & ATLANTIC AVE., Lona Beach. Robert H. Burner, ext. 2052. GA 2-5152. 5

PACIFIC COAST HWY. & LONG BEACH BLVD. or DEL AMO & LONG BEACH FRWY. Lona Beach. Phyllis Flink, ext. 518, HE 7-6791. 5

REDONDO BEACH BLVD. & VERMONT, Gardena. Darlene Becktel, ext. 2123. DA 3-8774. 5

RIDES OFFERED

8 a.m. — 4:45 p.m.

SOUTH ST. & ATLANTIC AVE., Lona Beach. Robert H. Burner, ext. 2052. GA 2-5152. 15

PACIFIC COAST HWY. & LONG BEACH BLVD. or DEL AMO & LONG BEACH FRWY. Lona Beach. Phyllis Flink, ext. 518, HE 7-6791. 15

BBSF Classified Ads

BBSF classified ad service is provided free of charge to all Norcrafters.

Ads for agencies, commercial enterprises and private businesses are not accepted.

Deadline is noon Wednesday, one week before publication.

FOR SALE

BICYCLE, boy's, 26", fully equipped, $40. OS 6-8517. A

YOUTH BED, Babyline, & mattress, $25. OS 5-9205. A

BABY EQUIPMENT, crib, $25; youth bed w/sides, $25; baby buggy, $10; chifferobe, $5. DA 3-7969. A

RAMBLER AMERICAN, 1960, 2-dr., stick shift, r/h, $1200. LA 1-5034. A

FORD, 1956, 2-dr., convert., r/h, T-Bird eng., p/steering. $450. OS 5-0657. A

RADIO, AM/FM/shortwave, phono jack, 8" & 3" speakers plus ext. speaker, $60. EX 4-2390. A

HOUSE, 2-bdrm., newly decorated, $12,750. OS 9-3129. A

RANGE, O'Keefe & Merritt, 4-yr-old, $75; skiis, w/safety bindings, $10. FR 8-5348. A

SEWING MACHINE, portable, $35; refrigerator, Coldspot, $100. OS 5-1057.

BICYCLE, 26" med. wgt., AMF Roadmaster, red w/chrome fenders, strong front clamp, $25. OR 7-2555. A

LINCOLN, 1953, r/h, $200. FR 1-2719.

HOUSE, in Orange County, 3-mo-old, center-hall plan, 20x23' living rm., fireplace, 3-bdrm., 2 baths, w/marble pullmans & stall shower, den-dining rm., breakfast bar, carpeting & drapes, built-in elec. oven & dishwasher, block wall fence, professionally landscaped, glass sliding doors lead to lge. patio, forced air heat, 2-car garage, $500 dn. JE 1-5421. A

CAMERA, Match-Matic Argus C-3, & Kodak Cavalcade, slide projector, auto., $150. PL 5-4534. A

PIANO, upright, good tone & action, $100. OR 1-0643. A

HOSPITAL BED, w/side rails, misc. sick room equip., $85; luncheon set, Mexican blue glass, $15. OS 9-7070. A

BANDSAW, 12", hvy. duty, motor, $50. FR 8-1732. A

REFRIGERATOR, 13 cu. ft., white, 2-dr., Self-A-Door, gold & pale green int., $100; Leroy lettering set, $40; davenport & chair, grey, plus contrasting chair, $75. DA 9-5986. A

BEDROOM SUITE, 2 nite stands, 2 3-way lamps, triple dresser, headboard, bookcase-type, double bed, Englander Red-Line mattress & box springs, modern $175; bed cover, Hollywood or twin 2-spring const., zippered covers, bolsters, spice brown tweed, $17.50. DA 7-1330. A

DINING ROOM SET, 8-pc., light oak. $35; surfboard, Robertson-Sweets, 2-yr-old. $60. OS 5-1708. A

FORD, 1950, 2-dr., rebuilt eng., good trans. car, $85. OR 2-0541. A

TELEVISION, 21", console, $45. OS 6-3090. A

SOFA, & chair, wrought iron brown. $25. TE 3-8903. A

FOR SALE

RANGE, Frigidaire, elec., storage space, large oven, clock, auto. timer, $75. OS 9-2433. A

BICYCLE, 10-spd., Derailleur, orig. paint, hi & lo beam lights, $65. FR 4-0736. A

PUPS, Poodle, white toy, 12-wks-old, complete shots, 1 male, $50; 1 female, $75. OS 9-8485. A

RIFLE, Winchester, 32-special, fully-lined leather carrying case & 3 boxes of shells, $50. OR 1-4986. A

TYPEWRITER, Royal, elec., elite type, auto. spacer, dash underline, mag. margin, $195. FA 1-0020. A

COOPERATIVE APT., 1-bdrm., landscaped patio, blt.-ins, refrig., w/w carpeting, draperies, garage, 4½% FHA financing, $16,000; camera, Argus C-3, 35mm, w/flash attachment, $30. HO 7-9201. A

FOR TRADE

SPRAY GUN, Binks, 7 cu. ft., will trade for 3, 4 or 5 cu. ft. gun. PL 5-4497. C

RENTALS OFFERED

APT., 1-bdrm., children & pets OK, yard, patio, near Aviation Blvd., stove, refrig. avail'able, $65 mo. Box 2601. E

APT., furn., above garage, w/w carpeting, water, min. gas & lights pd., no children, 1-bdrm. & den, $110 mo. DA 9-3246. E

FOUND

GLASS EYE in parking lot near Plant Two. Contact Nortronics Security Office, ext. 1994. K

PERSONALS

FLYING CLUB. Cessna 170, $6; 140, $4; Bonanza, $10; wet students OK, at Hawthorne GL 4-7770. L

RIDING CLUB TO RIDE DEC. 17

The NRC Riding Club folk are planning a country ride Sunday, December 17, it is announced by Joe Black, commissioner.

The place is Circle Bar Stables, 5443 Imperial in South Gate. Time is 2:30 p.m.

NRC G&M CLUB TO HEAR EXPERT

The next monthly meeting of the NRC Gem and Mineral Club will feature Norm Whitmore, prospector of renown, who will lecture on "Modern Prospecting Around the World," it is announced by Dan Kozlow, commissioner.

Mr. Whitmore will also display his mineral collection and show slides.

The event takes place on Wednesday, December 13, 7:30 p.m. at the NRC Clubhouse.

On December 16, the Gem and Mineral Club will hold its year-end Christmas party at the Annex. All members and their friends are cordially invited.

NRC VIGNETTE #19

NRC Gem and Mineral Club

GEM AND MINERAL CLUB—Do you like pretty rocks? Do you like to spend your weekends in the desert or in the mountains? If you do, then NRC Gem and Mineral Club is certainly your cup of tea. This club mixes education with pleasure in that they meet to hear authoritative speakers on mineral subjects and to see methods of identification demonstrated. Then with this knowledge they go to the desert and the mountains to apply it. The search is usually for gems and semi-precious gems. But no one has yet turned his back on a gold strike. G and Mers have done themselves very proud with their annual NRC Gem and Mineral Show. The third one is coming up March 24 and 25. Last year, 3000 people attended and authorities went on record as saying the Norcrafters put on the finest show yet seen in the Southland. A display of club specimens was also on exhibit at the Pomona County Fair last year. Photo shows Gem and Mineral Club Commissioner Dan Kozlow with other eager Norcrafter rock hounds as they explore Holcomb Valley for aragonite. Doyle Shook is commissioner, nights. All Norcrafters are encouraged to participate in gem and mineral activities. If you don't know rock hounding don't let it bother you. OJT is the most fun any way.

SCOTCH BOWLING DURING HOLIDAY

A bowling flash!

The NRC Bowling Club will stage a Christmas Scotch doubles tourney during the yearend holiday.

The event will take place Saturday, December 30.

Location will be the Beach Bowl, at 2430 Pacific Coast Highway in Hermosa.

Norcrafters can pay their $2 for each event fee at the Bowl on the day of the tournament.

Those who want to make reservations can do so by calling Personnel Activities.

Squad times are set at 10 a.m., 12 noon, 2 p.m., and 4 p.m.

There will be prize money and trophies.

Entries are unlimited but partners must be different for each sign up.

YEAREND GOLF TOURNEY AT FOX AND COYOTES

There will be an NRC annual yearend golf tournament held during the Christmas and New Year holidays, it has been announced by Ken Clayton and B. R. Doyle, Norair commissioners.

The play will be held on two courses, Fox Hills, 5880 West Slauson, Los Angeles and Los Coyotes, 8888 Los Coyotes Drive, Buena Park.

The Fox Hills rounds will be played December 28. Los Coyotes on December 29.

Cost for the tourney will be green fee plus prize fund, $9. Starting time is slated for 8 a.m. both days. Secure entry forms and pay fee at Personnel Activities.

Santa Here

(Continued from Page 1)

mood thanks to the good efforts of NRC Special Events Committee Chairman Earl Bird of Nortronics and his helpers.

There will be tinsel and tassels and red bells and glittering stars everywhere inside.

Paul White, nominal chairman of Special Events Committee, will also be very busy with official duties on this day, the nature of which are North Pole classified.

"There will be gifts for every youngster in the place. Candy will abound. There will be gallons and gallons of ice cream. There will be plenty of Santa's helpers to serve the throng," says Dave.

As soon as Santa debarks from Rudolph the Red-Nosed Helicopter and gets settled in the Product Display Building, each and every junior will have an opportunity to step up and issue contracts for Christmas stocking hardware.

It goes without saying that Santa's capability and technological know-how in this field is as sharp as ever.

Mr. Carney on behalf of Santa invites one and all to be on hand. "This is a once a year chance," he stated.

"Sure Catch" Advice to NRC Surf Fishing Folk

NRC surf fishing types have arranged a monthly meeting to take place December 16 at the south end of Zuma Beach, it is announced by John Pawlicki, commissioner.

All Norcrafters are invited to attend. Fishing activities are scheduled for 3 to 6 p.m.

John passes along the following suggestions to make the outing a sure catch:

Members should register at either of Red's Bait Shops, 113 Redondo Pier or 101 Highway at Pacific, for Red's special prizes.

Register at the beach with NRC representative.

Take a good supply of bait, soft-shell crabs and sugar-cured mackerel preferred.

Prizes will be given in accordance with Club regulations.

Symphonaires Plan Holiday Programs

The NRC Symphonaires have scheduled three yuletide shows during the month of December.

On December 9, next Saturday, at 7:30 p.m. they will sing at the Calvary Presbyterian Church in Hawthorne. On December 12 they will cross town and sing at the Shakespeare Club in Pasadena. On December 16 they will sing at the Inglewood Methodist Church. Time for this event is 7:30 p.m.

CASABA LEAGUES GO NEXT WEEK

Basketball league play gets under way at Leuzinger High School on Wednesday evening, December 13, it is announced by Bill Greene, commissioner.

Individual and team openings are still available.

Commissioner Bill Greene says "You're never too old to participate in the program. If you were, are, or want to be a basketball player, get those tennis shoes out and join us."

Air Force Warns Skin Divers on SCUBA Dangers

An Air Force News Service dispatch will be of interest to many Norcrafter skin divers.

Persons on flight duty may develop the "bends" if they have done any SCUBA diving within 12 hours before a flight, according to an anouncement made recently by a Military Air Transport Service command surgeon. The "bends," sometimes known as the caisson disease, afflicts tunnel workers when they make a too sudden change to normal pressure from a high pressure, sometimes necessary when working underground. The "bends" is also the occupational disease of deep sea divers.

The growing popularity of SCUBA diving has prompted the new estimate of the hazard of flying to even moderate altitudes, like 5000 feet, after SCUBA diving a short time before. According to the command surgeon, a diver is exposed to pressures equalling approximately 22 pounds per square inch at depths of 15 feet. If within 12 hours a pilot flies his aircraft to an unpressurized altitude of even 5000 feet, he is in danger of developing the "bends" because of too rapid a pressure change.

T-38 ARRIVAL DAY AT WEBB AIR FORCE BASE

A NEW BIRD FOR WEBB—T-38 Talon officially arrives at Webb Air Force Base, Big Spring, Texas, to take up her duties training future aerospace pilots in the ATC. Here Corporate Vice-president and Norair General Manager Dick Nolan; and Wing Commander Colonel Wilson H. Banks, greet Major Edward J. Hershock and Captain Robert Daley as they deliver first supersonic trainer.

CONGRESSMAN J. T. RUTHERFORD—Distinguished guest at T-38 arrival ceremonies was Texas Representative J. T. Rutherford. Here Mr. Nolan explains cockpit features of the nation's new trainer. The airplane, flown to Webb from Palmdale, was put on static walk-over display for the crowd to see and inspect.

WILD BLUE THEME—T-38 model graced the foyer of the Big Spring Country Club where notables gathered after the arrival. Norair's participation in staging the event was handled by Curt Burdett, Marketing representative; for the Air Force, Captain C. A. Smith, Wing Information officer did the honors. On the flight from Norair's Palmdale assembly line, one overnight stop was made at Williams AFB. Major Hershock established radio contact with Webb as he flew over El Paso. Audience at Webb was then given running commentary of the approach.

NEW HOME IN TEXAS—T-38 makes graceful touchdown at Webb as Major Hershock and Captain Daley bring airplane in for landing. Just prior, two subsonic passes were made over the field. At luncheon, Colonel Stanton T. Smith, ATC, reviewed background of the T-38 and outlined its position in pilot training program. Norair personnel attending included Mr. Nolan, Al Morgan, vice-president, Contracts and Service; John Alison, vice-president, Marketing; W. E. Woolwine, director, Engineering Project Management; Frank Mathes, chief, Product Support group; Charles Barr, assistant director, Corporate Public Relations; Hank Chouteau, Engineering test pilot; and Dan Collins, Northrop-San Antonio district representative.

Distinguished Visito

FROM JAPAN—Distinguished Japanese scientist, Dr. Noboru Niwa, director, Engineering, Tokyo University, visits Norair Division to observe our technologies as applied to the Fokker Bond tester and in ultrasonic evaluation of defects within steel and aluminum parts. Here Dr. Niwa is greeted by Bob Catlin, manager, Quality Control department, center, and Harold Re[illegible]lard, head, Evaluation and Facilities unit.